

Appendix F.1.1.0**Need to construct the Normal Value in accordance with Article 14(3) of the D&S Regs**

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* Appendix has excel format and is attached as tab in the excel file "GFR_NEG QR_Non-confidential_Appendix F.1.1.9_Constructed normal value and dumping calculations".

2. Introduction

1. China's Accession Protocol to the WTO establishes specific rules for calculating the normal value (NV) in anti-dumping (AD) investigations conducted by other WTO members concerning imports of goods from China. Furthermore, the Government of China (GOC) essentially directs and controls the Chinese GFR industry sector, via State-owned conglomerates and heavy state intervention. Costs and prices in the sector are therefore significantly distorted. Accordingly, it is necessary to establish the NV for the purpose of the dumping calculations in the present case based on the costs of production and sales in an appropriate (representative) third country.
2. This Appendix first discusses the specific rule of China's WTO Accession Protocol and the significant distortions in the Chinese GFR sector that require that the Trade Remedies Authority (TRA) not apply the standard methodology when establishing the NV (regulations 7-13), but instead rely on regulations 14(1)(b) and (c), 14(2)(c) and 14(3)(a) of the Trade Remedies (Dumping and Subsidisation) (EU Exit) Regulations 2019 (the "D&S Regs"), or at a minimum, make substantial adjustments in accordance with regulation 13(3).
3. In a second step, this Appendix substantiates the conclusion that Malaysia could serve as appropriate (representative) third country within the meaning of regulations 14(4) and 13(4).
4. In a third step, the Appendix constructs the NV based on costs in Malaysia, international costs, and industry utilisation and consumption standards.

3. The application of regulation 14(3) and regulation 13(3) of the D&S Regs is mandated in the present review investigation

3.1. Legal basis under the D&S Regs

5. Regulation 14 allows the construction of the NV based on costs in an **appropriate third country** where the country subject to the AD investigation is a WTO member whose terms of membership contain specific provision regarding the determination of the normal value and / or where there is a complete or substantially complete monopoly of its trade and where all or substantially all domestic prices are fixed by the government.
6. Indeed, Section 15 of China's Accession Protocol to the WTO¹ contains specific provision regarding the determination of the NV with regard to China. Therefore, the conditions of regulation 14(1)(b) are met.
7. Also, as shown in the following sub-section, the GOC essentially directs and controls the Chinese GFR sector as all major Chinese GFR producers are State-owned conglomerates, and there are ample policy measures in place that direct and control the Chinese GFR industry and the GFR sector more generally.

¹ See [China's WTO Accession Protocol](#), Section 15: In determining price comparability under Article VI of the GATT 1994 and the Anti-Dumping Agreement, the importing WTO Member shall use either Chinese prices or costs for the industry under investigation or a methodology that is not based on a strict comparison with domestic prices or costs in China based on the following rules: (i) If the producers under investigation can clearly show that market economy conditions prevail in the industry producing the like product with regard to the manufacture, production and sale of that product, the importing WTO Member shall use Chinese prices or costs for the industry under investigation in determining price comparability.

8. The application of regulation 14 and the construction of the NV with reference to an appropriate third country is therefore mandated in the present case.
9. However, even if the TRA does not apply regulation 14, the significant distortions present in the Chinese GFR sector mean that the heavily subsidised and distorted costs and prices of the Chinese domestic GFR producers *"do not reasonably reflect the overseas exporter's production, administrative, selling or general costs or profits in a market if those costs and profits were substantially determined by market forces"*.
10. At a minimum, therefore, the TRA must make substantial adjustments to the costs of Chinese exporting producers in accordance with regulation 13 of the D&S Regs based on the costs in an **appropriate representative third country**, international prices, costs or benchmarks, or other relevant factors.

3.2. There is substantial government intervention in the Chinese GFR sector as well as in the upstream industries

11. While the UK still formed part of the European Union, the European Commission had established in several TDI investigations that China, as a whole, and the Chinese glass fibre sector in particular, are not subject to normal market conditions but that heavy State interference has created significant distortions.² The situation in China has not changed since BREXIT.
12. The interventions by the GOC in the Chinese GFR industry include, *inter alia*, the following:
 - presence in the market of government-owned or controlled firms that set prices according to criteria other than profit maximisation, including selling inputs at less than adequate remuneration;
 - government subsidisation of the goods or of key inputs, including subsidies which are non-specific within the meaning of the WTO Agreement on Subsidies and Countervailing Measures;
 - government control of production; and
 - any other government intervention that might have a demonstrably material effect on prices and costs in the market.
13. In this regard, the European Commission Staff Working Document on significant distortions in the economy of the People's Republic of China for the purpose of trade defence investigations (the "China Report"), which was adopted while the UK was still part of the EU, has found that *"the overall picture that emerges concerning the framework in which economic activities take place in China is one where the State continues to exert a decisive influence on the allocation of*

² See European Commission Implementing Regulation (EU) 2021/328 of 24 February 2021 imposing a definitive countervailing duty on imports of continuous filament glass fibre products originating in the People's Republic of China following an expiry review pursuant to Article 18 of the Regulation (EU) 2016/1037 of the European Parliament and of the Council, OJ 2021 L65/1 ("EU Regulation 2021/328"), recitals 49 *et seq.*

See also European Commission Implementing Regulation (EU) 2020/492 of 1 April 2020 imposing definitive anti-dumping duties on imports of certain woven and/or stitched glass fibre fabrics originating in the People's Republic of China and Egypt, OJ 2020 L108/1 ("EU Regulation 2020/492"), recitals 98 *et seq.*

- resources and on their prices*".³ The pricing and allocation of factors of production, such as land, energy, capital and material inputs, are "*influenced by the State in a very significant manner*".⁴
14. These findings clearly apply to the Chinese GFR industry. For instance, EU Regulation 2017/724 (extending the existing EU AD measures on GFR imports following an expiry review) and EU Regulation 2021/328 (extending the existing EU AS measures following an expiry review), as well as EU Regulation 2020/492 (imposing EU AD measures on imports of glass fibre fabrics from China), contain ample evidence of the existence of these government interventions.
 15. Indeed, the **GOC owns the large majority of the Chinese GFR producers**, as well as upstream suppliers (in particular mining and chemical companies) and downstream users.⁵
 16. The two largest and internationally most dominant and active Chinese GFR producers, CPIC and Jushi (and its ultimate parent company, CNBM), are major State-owned conglomerates⁶.
 17. The support and connections of, in particular, Jushi with Chinese public bodies is widely documented. Mr Zhang Yuqiang, the Chairman of the Board of Directors of Jushi, occupies high posts in the hierarchy of the main Chinese glass fibre associations. He is the vice chairman of the China Building Materials Federation, the China Composites Industry Association and the Chinese Fiberglass Industry Association, which are all closely linked to the GOC.⁷ Mr Zhang Yuqian also enjoys a special government allowance from the State Council. Mr Song Zhiping, the executive director and chairman of the board of CNBM, is also an executive vice chairman of the China Building Materials Federation.
 18. The China Building Materials Federation is approved by the Chinese Ministry of Civil Affairs and operates under the guidance and supervision of the State-owned Assets Supervision and Administration Commission of the State Council. The main tasks of the association include: (i) to act as a bridge between the government and enterprises; (ii) to assist the government to formulate industry development plans and various industrial policies; (iii) to report to the government on the development process and demands of the industry; (iv) to collect and organize domestic and international industry trends, (v) to analyse and report on the economic operation of the industry; (vi) to lead the industry to achieve healthy and orderly development; and (vii) to serve member enterprises and assist in product structure adjustment and transformation.⁸ In addition to being directly linked to the Chinese government, the trade association is also interconnected with other industry associations.⁹
 19. The close ties make it particularly easy for Chinese (State-owned) GFR producers to receive ample funding from various government agencies at different levels as well as from national financial institutions.
 20. With the high level of government intervention in the GFR industry and a high share of SOEs in the sector, even privately-owned producers are prevented from operating under market

³ See **Appendix G.1**, Significant distortions in the Chinese economy, page 3.

⁴ See **Appendix G.1**, Significant distortions in the Chinese economy, page 3.

⁵ See **Appendix G**, paragraph 9 for more details and reference to the supporting evidence.

⁶ See EU Regulation 2020/492, recital 119.

⁷ See **Appendix G.1**, Significant distortions in the Chinese economy, pages 33-34. See also EU Regulation 2020/492, recital 134.

⁸ See EU Regulation 2020/492, recital 134.

⁹ See EU Regulation 2020/776, recital 175.

conditions. Indeed, both public and privately owned enterprises in the GFR sector are also subject to policy supervision and guidance as set out in the section below.

21. **Chinese policies and measures** applicable to the GFR sector discriminate in favour of domestic suppliers or otherwise influence free market forces.¹⁰ The direction of the Chinese economy, including the GFR sector, is to a significant degree determined by an elaborate system of planning which sets out priorities and prescribes the goals on which the central and local governments must focus. Relevant plans exist at all levels of government and cover virtually all economic sectors. The objectives set by the planning instruments are of binding nature and the authorities at each administrative level monitor the implementation of the plans by the corresponding lower level of government. Overall, the system of planning in China results in resources being driven to sectors designated as strategic or otherwise politically important by the government, rather than being allocated in line with market forces.¹¹
22. As a high and new technology new materials industry, several national and regional, general and sector-specific plans encourage government authorities at all levels and State-owned financial institutions to foster the advancement of the GFR industry in China.
23. The 13th Five-Year Plan for National Economic and Social Development of the PRC (the "13th 5-Year Plan"), which covers the period 2016-2020, as well as the recently published 14th 5-Year Plan, covering the period 2021-2025, aim to develop further new materials industries by strengthening research and development and enhancing the innovation capability of the manufacturing industry.¹² The 5-Year Plans highlight the strategic vision of the GOC for the improvement and promotion of key industries. It emphasizes the role of technological innovation in the economic development of the PRC, as well as the continued importance of "green" development principles. According to Chapter 5 of the 13th 5-Year Plan, one of the main development lines is to promote the upgrading of the traditional industrial structure. Chapter 22 further elaborates this idea, explaining the strategy to modernize traditional industries in the PRC by promoting technological conversion.
24. The 13th 5-Year Plan emphasises that China "*will move faster to make breakthroughs in core technologies in fields such as next generation information and communications, new energy, new materials [...]*". The plan furthermore envisages that there will be projects carried out related to key new materials research, development and application.
25. The new materials industry is also an encouraged industry under the Made in China 2025¹³ initiative, and thereby eligible to benefit from considerable State funding. A number of funds have been created to support the Made in China 2025 initiative and hence the GFR industry, such as the National Integrated Circuit fund, the Advanced Manufacturing Fund and the Emerging Industries Investment Fund.
26. Furthermore, the Made in China 2025 Roadmap¹⁴ contains strategic support mechanisms, including financial support policies, fiscal and taxation support, State Council oversight and support for its 10 strategic sectors. GFR are included under "new materials" (high performance fibres).

¹⁰ See **Appendix G**, paragraphs 5 *et seq* for a detailed overview of all the plans and reference to the supporting evidence.

¹¹ See EU Regulation 2020/492, recital 123.

¹² See EU Regulation 2021/328, recital 51-53 and EU Regulation 2020/492, recital 127.

¹³ See EU Regulation 2021/328, recital 54.

¹⁴ See EU Regulation 2021/328, recital 55 and EU Regulation 2020/492, recital 125.

27. The GOC further controlled and supported the GFR industry through the 13th 5-Year Building Materials Industry Development Plan (2016-2020).¹⁵ This plan called for optimizing China's industrial structure by, inter alia, expanding emerging industries such as glass-based materials, industrial ceramics, intraocular lens, high-performance fibres and composites, and graphene and modified materials. This was to be achieved through government funding, taxation, financial, pricing, energy, and environmental protection policies, and support for capital to participate in the mergers, acquisitions and restructuring of building materials enterprises through various means including lending.
28. The GFR industry has further been controlled by the 2016-2020 5-Year Plan for Intelligent Manufacturing published by the Chinese Ministry of Industry and Information Technology¹⁶, which set up 10 key tasks aimed at shortening the product development cycle, improving production efficiency, product quality, reducing operating cost, resources and energy consumption, and accelerating the development of intelligent manufacturing.
29. Moreover, the China High-Tech Export Products Catalogue,¹⁷ issued by the Ministry of Science and Technology, the Ministry of Foreign Trade and the General Administration of customs, lists 1900 high-tech products in eight categories, which are targeted for preferential export policies by the GOC. One of the categories is the "New Materials" category, which includes GFR. In addition, the China High-Tech Products Catalogue, issued by the Ministry of Science and Technology, the Ministry of Finance and State Administration of Taxation, includes "new materials" in its 11 priority areas.
30. Furthermore, according to the Law of the PRC on Science and Technology Progress¹⁸, high-tech enterprises established in High-tech Development Zones can benefit from a list of preferential policies, which include an Enterprise Income Tax ("EIT") rate of 15 %, instead of the normal rate of 25 % and, if the output value of export products reaches 70 % of the total value for that year, the EIT rate is further reduced to 10 %. Also, newly-established high-tech enterprises are exempt from EIT tax for the first two years from the date production begins and from construction tax. For new technology development and production and operation houses, R & D land is tax-free, equipment used by high-tech enterprises for high-tech production and development is subject to accelerated depreciation, and export products produced by high-tech enterprises are exempt from export tariffs except those restricted by the State or concerning specific products.
31. Under this framework, the GOC has provided (and is still providing) ample subsidies to Chinese GFR exporting producers, including preferential financing¹⁹, tax benefits²⁰ and the LTAR provision of land-use rights²¹ and electricity²².
32. In addition, GFR producers use a large number of **factors of production** of which the costs are also distorted in China.

¹⁵ See EU Regulation 2021/328, recital 57.

¹⁶ See EU Regulation 2021/328, recital 58.

¹⁷ See EU Regulation 2021/328, recital 59.

¹⁸ See EU Regulation 2021/328, recitals 59.

¹⁹ See EU Regulation 2021/328, recitals 82-117.

²⁰ See EU Regulation 2021/328, recitals 159-206.

²¹ See EU Regulation 2021/328, recitals 120-136.

²² See EU Regulation 2021/328, recitals 137-157.

33. Gas, one of the important factors of production, is produced in China mainly by SOEs (96 % of the natural gas is controlled by China National Petroleum Corporation, China Petroleum & Chemical Corporation and China National Offshore Oil Corporation), and gas prices are regulated by the National Development and Reform Commission.²³
34. Kaolin, another important raw material in GFR production, is covered by the 13th 5-Year Plan for Mineral resources, and is furthermore included in the 13th 5-year Plan for the Building Materials Industry. Those two plans set out governmental control over the industry in general, set mining volume standards, encourages SOE reform and envisage a number of support measures and governmental intervention into private initiatives.²⁴
35. Dolomite is another factor of production subject to State support in the PRC. It is, for example, one of the encouraged industries for the Inner Mongolia Autonomous Region in the Central and Western China Foreign Investment Catalogue.²⁵
36. All land in the PRC is owned by the Chinese State (collectively owned rural land and State-owned urban land). Its allocation remains solely dependent on the State. There are legal provisions that aim at allocating land use rights in a transparent manner and at market prices, for instance by introducing bidding procedures. However, these provisions are regularly not respected, with certain buyers obtaining their land for free or below market rates. Moreover, authorities often pursue specific political goals including the implementation of the economic plans when allocating land.²⁶ Much like other sectors in the Chinese economy, the GFR producers are subject to the ordinary rules on Chinese property laws. That has the effect that these companies, too, are subject to the top-down distortions arising from the discriminatory application of property laws.
37. Wage costs in the Chinese GFR sector are also distorted.²⁷ A system of market-based wages cannot fully develop in the PRC as workers and employers are impeded in their rights to collective organisation. The PRC has not ratified a number of essential conventions of the International Labour Organisation, in particular those on freedom of association and on collective bargaining. Under national law, only one trade union organisation is active. However, this organisation lacks independence from the State authorities and its engagement in collective bargaining and protection of workers' rights remains rudimentary. Moreover, the mobility of the Chinese workforce is restricted by the household registration system, which limits access to the full range of social security and other benefits to local residents of a given administrative area. This typically results in workers who are not in possession of the local residence registration finding themselves in a vulnerable employment position and receiving lower income than the holders of the residence registration. Those elements lead to the distortion of wage costs in the PRC. The GFR sector is affected by the distortions of wage costs both directly (when making the product concerned or the main raw material for its production) as well as indirectly (when having access to capital or inputs from companies subject to the same labour system in the PRC).

²³ See EU Regulation 2020/492, recital 137.

²⁴ See EU Regulation 2020/492, recital 137.

²⁵ See EU Regulation 2020/492, recital 137.

²⁶ See **Appendix G**, paragraphs 143 *et seq* for a detailed overview of all the plans and reference to the supporting evidence. See also EU Regulation 2021/328, recitals 120-136 and EU Regulation 2020/492, recitals 139-142.

²⁷ See EU Regulation 2020/492, recitals 143-145.

As demonstrated in Section 5.1.g below, labour constitutes an important factor in the production of GFR.²⁸

38. **Access to finance** in the PRC is granted by institutions which implement public policy objectives or otherwise do not act independently of the State²⁹ and is therefore subject to various distortions.
39. Firstly, the Chinese financial system is characterised by the strong position of State-owned banks, which, when granting access to finance, take into consideration criteria other than the economic viability of a project.³⁰ Similarly to non-financial SOEs, the banks remain connected to the State not only through ownership but also via personal relations (the top executives of large State-owned financial institutions are ultimately appointed by the Chinese Communist Party)³¹ and, again just like non-financial SOEs, the banks regularly implement public policies designed by the government. In doing so, the banks comply with an explicit legal obligation to conduct their business in accordance with the needs of the national economic and social development and under the guidance of the industrial policies of the State. This is compounded by additional existing rules, which direct finance into sectors designated by the government as encouraged or otherwise important.
40. Furthermore, bond and credit ratings are often distorted for a variety of reasons including the fact that the risk assessment is influenced by the firm's strategic importance to the GOC and the strength of any implicit guarantee by the government. An IMF study also found that Chinese credit ratings systematically correspond to lower international ratings.³²
41. This is compounded by additional existing rules, which direct finances into sectors designated by the government as encouraged or otherwise important. This results in a bias for lending to SOEs, large well-connected private firms and firms in key industrial sectors, which implies that the availability and cost of capital is not equal for all players on the market.³³
42. Also, borrowing costs have been kept artificially low to stimulate investment growth (resulting in structural overcapacities).³⁴
43. Although nominal interest rate liberalization was achieved in October 2015, price signals are still not the result of free market forces, but are influenced by government-induced distortions.³⁵
44. Overall credit growth in the PRC indicates a worsening efficiency of capital allocation without any signs of credit tightening that would be expected in an undistorted market environment. As a result, non-performing loans have increased rapidly in recent years. Faced with a situation of increasing debt-at-risk, the GOC has opted to avoid defaults. Consequently, bad debt issues have been handled by rolling over debt, thus creating so-called 'zombie' companies, or by transferring

²⁸ See **Appendix F.1.1.9**.

²⁹ See **Appendix G**, paragraphs 36 *et seq* for a detailed overview of all the plans and reference to the supporting evidence. See also EU Regulation 2021/328, recitals 65-101 and EU Regulation 2020/492, recitals 146-155.

³⁰ See EU Regulation 2021/328, recital 71.

³¹ See EU Regulation 2021/328, recital 72.

³² See EU Regulation 2020/492, recitals 149.

³³ See EU Regulation 2020/492, recitals 150.

³⁴ See EU Regulation 2020/492, recitals 151.

³⁵ See EU Regulation 2020/492, recital 152.

the ownership of the debt (e.g. via mergers or debt-to-equity swaps), without necessarily removing the overall debt problem or addressing its root causes.³⁶

45. In essence, despite the recent steps that have been taken to liberalize the market, the corporate credit system in the PRC is affected by significant distortions resulting from the continuing pervasive role of the state in the capital markets.³⁷
46. In fact, the findings of the European Union in the latest anti-subsidy investigation of GFR imports from China showed that the GFR producers in the PRC benefitted from preferential loans, both from State-owned banks and from private banks.³⁸ Therefore, the substantial government intervention in the financial system leads to major distortions of the market conditions. The sampled exporting producers were found to have borrowed significant amounts from banks and thus benefited from the preferential policies and resulting distortions.
47. In conclusion, there is ample compelling (*prima facie*) evidence that the Chinese GFR sector is subject to significant Government control and heavy distortions within the meaning of regulations 14 and 13 of the D&S Regs.

4. Choice of appropriate (representative) third country

48. According to regulation 13(5) and 14(4), the following criteria must be taken into account to determine whether a country is an appropriate (representative) third country: (a) whether and to what extent reliable information is made available to the TRA by overseas exporters in that country or territory at the time of selection of that country or territory; (b) whether the country or territory has a similar level of economic development to the exporting country or territory; and (c) any other factors it considers relevant.
49. NEG considers Malaysia an appropriate (representative) third country.
50. First, based on data published by the World Bank, China and Malaysia have a similar level of economic development, as both are classified as upper-middle income countries.³⁹
51. Furthermore, Malaysia has GFR production based on the same production methodologies as China and the UK, and GFR produced in Malaysia have also the same physical characteristics and uses as Chinese and UK GFR, and compete directly with them in the UK and other markets such as the EU.
52. There is one known Malaysian GFR producer who would also be ready to cooperate with the TRA. In addition, this Appendix contains publicly available cost data for Malaysia and international markets.
53. Finally, NEG has also analysed the domestic GFR market in Malaysia to verify that there are no significant distortions that could make Malaysia an inappropriate choice to be considered a representative country. In 2020, domestic Malaysian GFR demand was approximately 24,000

³⁶ See EU Regulation 2020/492, recitals 153.

³⁷ See EU Regulation 2020/492, recitals 154.

³⁸ See also EU Regulation 2021/328, recitals 65-81.

³⁹ See **Appendix F.1.1.1**, World Bank income classification.

MT. The Malaysian GFR producer have a production capacity of between 400,000 and 500,000 MT, and there are also imports of the product concerned from several countries.

54. The Malaysian market is therefore characterised by a significant level of competition, which further ensures that the production costs are not distorted, e.g. by a protected market environment that encourages inefficiency.
55. Based on the above, NEG concludes that it is appropriate to use Malaysia as appropriate (representative) third country in the present investigation.

5. Construction of NV

56. This section explains the methodologies used to construct the NV.
57. The costs are established based on an annual production capacity of 200,000 MT (which is representative of the production capacities of individual Chinese GFR production plants⁴⁰). The production volumes for each of the three product types (rovings, chopped strands and mats) in China vary from producer to producer and is therefore not known to NEG. It has therefore calculated the production mix based on Chinese imports in the UK in 2020 for each product type, available via HMRC.⁴¹
58. Costs of individual production items are taken from international sources and public sources in Malaysia. Consumption and utilisation rates are based on NEG's own rates and international standards. This is reasonable as the production processes are essentially identical around the world. Currency conversions have been made based on the applicable exchange rates published by the Bank of England for the IP.

5.1. Costs of production

59. The main costs of production and sale are (i) batch materials (kaoline, dolomite, limestone and silica, i.e. a "sand" mix that is melted); (ii) bushings (made from rhodium and platinum and which are a major (consumable) part of the production equipment), (iii) binders (chemicals to be applied to the GFR in the manufacturing process after they pass the bushings), (iv) energy (electricity, natural gas and oxygen), (v) labour, (vi) waste, (vii) packaging, (viii) spare parts and (ix) sales, general and administrative (SG&A) costs.
60. Public price/cost information is available from Malaysian or global sources for: (i) batch materials (kaoline, dolomite, limestone and silica), (ii) bushings (international price quotations for rhodium and platinum), (iii) energy (electricity and gas) and (iv) labour costs.
61. No public price/cost information is available from Malaysian or global sources for (i) binders, (ii) energy (oxygen), (iii) waste, (iv) packaging, (v) spare parts and (vi) SG&A costs.

⁴⁰ See, for example, **Appendix F.2.2**, which states that the Jushi Chengdu, Jushi Group's newest GFR production plant in China, has an annual estimated production capacity of approximately 250,000 MT.

⁴¹ See **Appendix F.1.1.2**.

a. Batches

62. Batches are mixes of sands such as kaolin, dolomite, limestone and silica which are melted to be the raw material of the GFR. The prices of kaolin, dolomite and silica are established based on Malaysian price quotes and offers available on the internet (see **Appendix F.1.1.4**).
63. To calculate batch consumption per MT, NEG established the use of sand per MT of GFR, and applied industry average glass efficiency rates and batch yield rates. The glass efficiency describes how much sand is converted into glass as there are losses, most importantly when the sand is moved from storage to furnace and when melted. The batch yield describes how much batch is transformed into GFR, as there are usually losses in the production process, e.g. at the bushings.
64. The production of 1 MT of GFR requires approximately 1.4 MT of sand. The calculations are based on a batch mix consisting of Kaolin (33%), Dolomite (10%), Limestone (25%) and Silica (32%).

b. Alloys / Bushings

65. Bushings are a key piece of equipment in the GFR production process. The batch streams vertically through little holes in the bushings thereby giving the GFR the form of filaments. The bushings are made of rhodium and platinum alloys and therefore constitute significant cost factors.
66. The costs of fabricating a bushing are approximately USD 8,000. The number of bushings required in the production depends on the production volume and on the lifetime of the bushings. GFR manufacturers can pull approximately 2 MT of GFR per bushing per day.
67. Due to the high operating temperatures, bushings wear out over time and need to be replaced periodically. The average lifetime of a bushing varies among products produced and is approximately 200 days. The number of bushings used during a year is calculated by dividing the annual production volume of each product type by the 2 MT pull rate and then dividing the result by 365 days. To arrive at the cost total that number is multiplied by the costs of bushings.
68. The wear is approximately 0.5 gram per kg of GFR produced (depending on the product type) and the costs are approximately USD 217 per gram based on the international price quotes of rhodium and platinum. The consumption ratio of rhodium and platinum used for the production of the bushings is generally 20% rhodium and 80% platinum.

c. Binders

69. Binders are chemicals that are applied to the GFR and give it particular characteristics and functionalities. The cost of binders ranges between approximately USD 8/kg and USD 24/kg. Furthermore, approximately 10 kg of binders are incorporated in 1 MT of finished GFR product. The cost of the binder was therefore established by multiplying the price of the binder by the chemical content incorporated in the finished good.

d. Energy

70. This section explains the calculation of the energy costs. Supporting documentation is attached as **Appendix F.1.1.6**.

i. Electricity

71. The costs of energy are established based on publicly available data concerning electricity prices for industrial users in Malaysia.
72. The data is obtained from the website of Tenaga Nasional Berhad (TNB), which is the largest electricity utility in Malaysia at <https://www.tnb.com.my/commercial-industrial/pricing-tariffs1/>. The UK industry used the average between the peak (i.e. 33.70sen/kWh or MYR0.34/kWh) and off-peak (i.e. 20.20sen/kWh or MYR0.20/kWh) period tariffs in the special tariff E3 (high voltage peak/off-peak industrial tariff) applicable to industrial users in 2020 (i.e. MYR0.27/kWh) available at https://www.tnb.com.my/assets/files/SIT_rate_2021.pdf.
73. The energy intensity of rovings and chopped stands was set at 3.4 kwh/kg and for mats at 6 kwh/kg. The energy mix between electricity and gas was set at 45% and 55%.

ii. Natural gas

74. The costs of natural gas are established based on publicly available data concerning gas prices for industrial users in Malaysia.
75. The data is obtained from the website of Suruhanjaya Tenaga (the Malaysian Energy Commission) at <https://www.st.gov.my/en/web/consumer/details/6/1>.
76. The UK Industry used the information on Regulated Piped Gas prices in Peninsular Malaysia for 2020 in the distribution segment, i.e. MYR33.65/mmBtu or MYR1.19/Nm³.
77. Since the quotes found for natural gas prices were expressed in mmBtu, the costs of natural gas were converted into m³ based on the assumption that 1 mmBtu amounts to 28.263682 m³.

iii. Oxygen

78. Oxygen is used to blast the temperature in the furnace and obtain a better melting of the sand to improve the batch quality.
79. To the UK Industry's best knowledge, there are no public sources from which information on costs of oxygen for the production of GFR could be obtained.
80. The costs of oxygen are therefore established at 2% of the total manufacturing costs, which is based on the UK industry's costs and its market understanding of what is a reasonable industry standard.

e. Spare parts

81. To the UK Industry's best knowledge, there are no public sources from which information on costs of spare parts for the production of GFR could be obtained.
82. The costs of spare parts were therefore established at 5% of manufacturing costs which is based on the UK industry's costs and its market understanding of what is a reasonable industry standard.

f. Packaging costs

83. To the UK Industry's best knowledge, there are no public sources from which information on costs of packaging for the production of GFR could be obtained.

84. The packaging costs were established at £0.02 per kg of GFR produced, which is based on the UK industry's costs and its market understanding of what is a reasonable industry standard.

g. Manufacturing labour costs

85. The costs of labour related to manufacturing are established based on publicly available data on average wages in Malaysia, obtained from the report available at https://www.kellyservices.com.my/media/kellymalaysianew/client/PERSOLKELLY%20MY%20Salary%20Guide%202020/Malaysia%20Salary%20Guide%202020_2021.pdf. The costs of direct labour were established at the level Malaysia's minimum salary.
86. The salaries in the table below were established based on the salaries for the closest comparable jobs in the report.
87. The calculations are based on a workforce of 2,000 workers, the approximate number of manufacturing related employees required for a GFR plant with a 200,000 MT production capacity. The job allocations are made based on information from the UK industry.
88. Based on the above information, the manufacturing-related personnel costs in Malaysia are approximately:

Production related labour	Direct /Indirect	Headcount	Total annual costs (GBP)
Plant leader	Indirect	5	194,828
Plant department leaders	Indirect	20	779,312
Technical Engineers	Indirect	15	158,646
Maintenance	Indirect	210	2,454,832
Logistics	Indirect	32	295,693
Supervisors	Indirect	42	303,932
Warehouse	Indirect	96	694,701
Quality	Indirect	10	94,631
Direct Labour	Direct	1,570	4,194,924

Source: The UK Industry, Malaysia Salary Guide 2021-2021, Malaysian minimum salary.

89. It was conservatively assumed that the number of annual working hours per employee is 1,800.
90. See **Appendix F.1.1.7** for the supporting documents.
91. Non-manufacturing related labour costs, including labour costs related to administrative, sales and general activities, are included in the SG&A costs (see below).

h. Period costs

92. Period costs comprise (i) waste, (ii) maintenance and other and (iii) depreciation.

i. Waste

93. Costs of waste were established at approximately 8% of the production volume and at a unit cost of USD 100 per MT. This is based on the UK industry's costs and its market understanding of what is a reasonable industry standard. These are the costs for e.g. landfills, recycling, etc.

ii. Maintenance and other

94. The annual maintenance costs were set at USD 7 million. This is based on the UK industry's costs and its market understanding of what is a reasonable industry standard.

iii. Depreciation

95. The asset book value of NEG Malaysia's plant was established at USD 391 million based on public information regarding NEG Malaysia's property, plant and equipment.⁴² The value was adjusted accordingly as NEG Malaysia has a higher capacity than that used in these simulations.
96. Depreciation was calculated over a period of 10 years. This is based on the UK industry's costs and its market understanding of what is a reasonable industry standard.

5.2. SGA costs

97. SG&A costs were established at 12% of total manufacturing costs. This is based on the UK industry's costs and its market understanding of what is a reasonable industry standard.

5.3. Profit

98. No public information is available from Malaysian or global sources for the profitability of GFR production and sale. A reasonable profit was established at 10% because that is the minimum profit necessary to finance investments in capital-intensive industries such as the GFR industry.

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⁴² See **Appendix F.1.1.8**, NEG 2020 Integrated Report, page 85.