

## CONTENTS

<b>Introduction</b>	<b>2</b>	<b>2: Data assessment process</b>	<b>6</b>
Benchmark Minerals Mission Statement	2	<b>3: Data assessment</b>	<b>7</b>
Assessment introduction	3	3.1 Lithium ion battery production capacity data	7
Methodology structure	3	3.2 Tier data	7
		3.3 Production capacity by cathode type	7
		3.4 Raw material demand	7
<b>1: Data collection &amp; reporting</b>	<b>4</b>	<b>4: Complaints &amp; enquiries</b>	<b>8</b>
1.1. How we collect gigafactory data	4	<b>5: Revision history</b>	<b>8</b>
1.2. Typical interactions	4	<b>6: Enquiries and contact</b>	<b>9</b>
1.3. Data sources	4		
1.4. Data assessment process	5		

# INTRODUCTION

## BENCHMARK MINERALS MISSION STATEMENT

Benchmark Mineral Intelligence (Benchmark Minerals) strives to create methodologies that accurately reflect the market dynamics of the industries we cover and allow for independent data collection, free of distortion or misrepresentation.

Our market assessments track key metrics that can be regularly assessed to determine the growth trajectory of that given market.

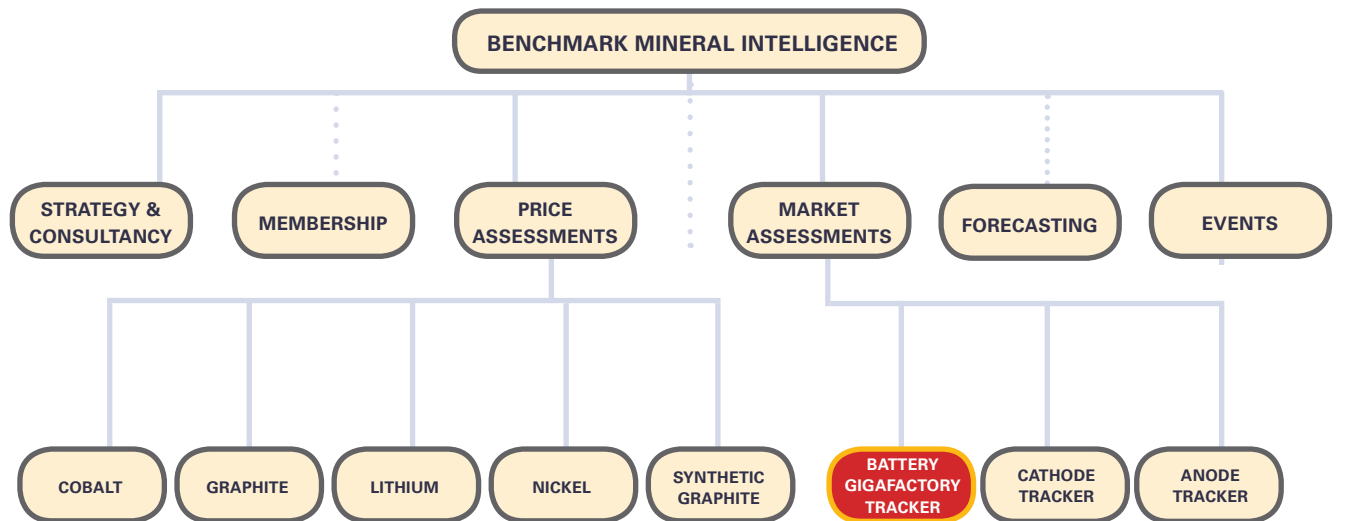
For the lithium ion battery gigafactory assessment we have identified key data points which allow for direct comparative analysis of the current state of the industry. These include (but are not limited to):

- Lithium ion battery production capacity, current and forecast, on a plant by plant basis
- The location of capacity
- Cathode type used by each facility
- Tier status of each producer

Benchmark Minerals focuses on primary data collection from different sources directly from the supply chain in order to build an informed and robust perspective of the market.

Due to the opaque nature of the industry, Benchmark Minerals employs expert analysts to collect and interpret this information, using editorial expertise to assess the information received.

## COMPANY STRUCTURE



This methodology describes the process by which Benchmark Minerals assesses lithium ion battery production capacity and the standards our analysts adhere to in data collection.

The information we publish is distributed directly to subscribers and also made available via our website for authorised users/licensers. The timing and delivery of this information is outlined in section 1.4.

Benchmark Minerals methodologies are created and updated in line with developments in each of the

specific markets we cover.

As the industries we follow evolve, we update the data we collect and process we adhere to in order to ensure the most accurate and relevant data is made available to the market.

All Benchmark Minerals methodologies are tailored to the markets they cover and reflect Benchmark's commitment to independent and accurate price and data reporting.

# INTRODUCTION

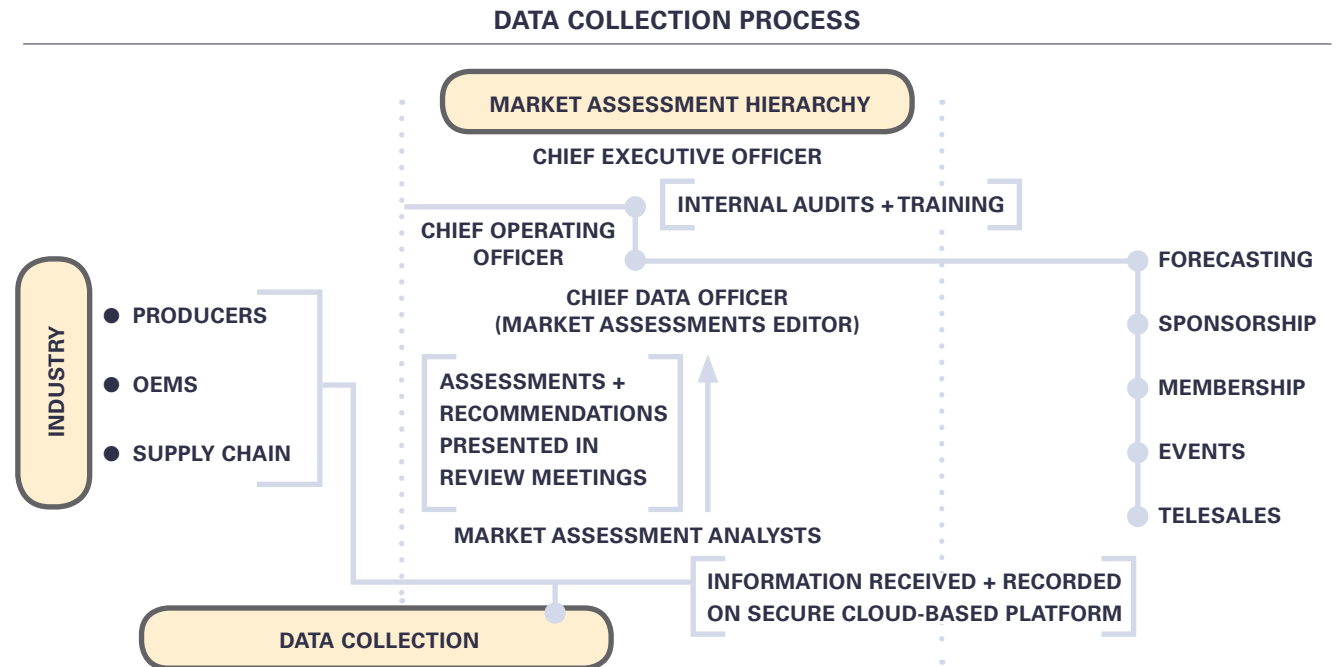
## INTRODUCTION

The Benchmark Minerals Lithium Ion Battery Gigafactory Assessment publishes the ongoing and future development of lithium ion battery production capacity globally.

The data is designed to show a comprehensive assessment of lithium ion battery production sites, current and future. This is primarily to assess the battery production capacity that will be available to the industry and to allow for comparison for meeting future demand requirements.

Alongside this, Benchmark Minerals assesses supplementary data including battery producer tier assessments, production capacity by cathode type and the implied battery raw material demand of the plants in the assessment (more details on this can be found in section 2 of this methodology).

This data can be used alongside the capacity data to make informed decisions relating to the growth trajectory of the industry. Specifically, the quality of planned production capacity and its suitability to supply various markets, the technology trends of the future market and the volumes of battery raw materials that will be needed to fulfil this capacity.



## METHODOLOGY STRUCTURE

This methodology has been structured to provide a detailed description of our data collection processes and procedures. The methodology is structured as follows:

■ **SECTION 1:** An overview of our data collection methods and how we assess the data we collect to use in the final assessment.

■ **SECTION 2:** Highlights the key types of data that are collected for the assessment and how they relate to the market.

■ **SECTION 3:** Benchmark Minerals team members and contact details for enquiries

# 1. DATA COLLECTION

The objective of Benchmark Minerals Lithium Ion Battery Gigafactory Assessments is to provide an accurate and independent evaluation of global lithium ion battery production capacity.

The data that is used in our assessments is collected directly from the market, and we encourage our sources to report any supplementary information possible in order to determine the most accurate reflection of the data we have collected.

In this section we detail how this information is collected, used and reported to the market via Benchmark Minerals Market Assessments.

## 1.1 HOW WE COLLECT DATA

Benchmark Minerals' market data is collected primarily via direct contact with lithium ion battery producers or companies that have outlined detailed plans to produce lithium ion batteries. Our team of analysts verify and substantiate this information through a range of primary and secondary sources.

Our primary process involves a dedicated team of experienced market analysts communicating regularly with the industry via phone, email, messenger services and direct meetings in person.

All information received is logged on our internal secure cloud-based system by the analyst upon receipt of the data.

As a secondary method of verifying this information, the data is checked against public sources such as company reports, and government data.

Although the number of contacts for any one data point can vary, the insight and experience of our analysts ensure that all data published can be authenticated and supported by market intelligence.

## 1.2 TYPICAL INTERACTIONS

The primary information in the Benchmark Minerals Lithium Ion battery Gigafactory Assessment is collected directly from industry contacts, from the companies included in the assessment. This information can also be supplemented by:

- Public statements made by the company under assessment
- Information gathered from other companies in the supply chain - directly involved with the one in question
- Third-party reports of market activity

Benchmark Minerals looks to confirm all data points that have not been received directly from the

company under assessment within 6 months.

Data points that have not been collected directly from the company are assessed for reliability and can, in some instances, be used in the assessment prior to confirmation.

In order to protect the confidentiality of our data sources, specific interaction information is not disclosed to the market.

## 1.3 DATA SOURCES

Benchmark Minerals conducts confidential interactions with market participants in order to source the data and market intelligence used for its market assessments.

Due to the private nature of the discussions Benchmark has with its contacts, full disclosure of the interaction is often not possible.

Data providers do not enter into a formal agreement to provide data to Benchmark Minerals. Instead interactions with the market are conducted on a trust basis which require internal review and editorial judgement.

# 1. DATA COLLECTION

## 1.4 DATA ASSESSMENT PROCESS

Benchmark Minerals lithium ion battery gigafactory capacity data is assessed on a monthly basis.

Benchmark Minerals analysts conduct the monthly review on the 15th of the month and the data is published on our website within one working day.

The monthly data review involves all relevant analysts collecting their respective data points for the time period in question and reviewing in relation to other information received.

Due to the nature of data and information received by Benchmark analysts, on occasion, data received in an assessment month may not be published until later months whilst it is verified.

### Editorial judgement

Benchmark Minerals can employ a process of editorial judgement to assess the capacities and/or cathode types used for each of the lithium ion battery gigafactories published in the assessment.

This process originates from primary data collection which is logged and reviewed in regular team meetings involving the relevant market analysts.

After the data is reviewed and each relevant analyst provides their assessment, the market assessment

editor will analyse and make recommendations in relation to supporting evidence and internal data logs to check for accuracy.

The market assessment editor verifies the data set before publication and distribution

### Units of measurement

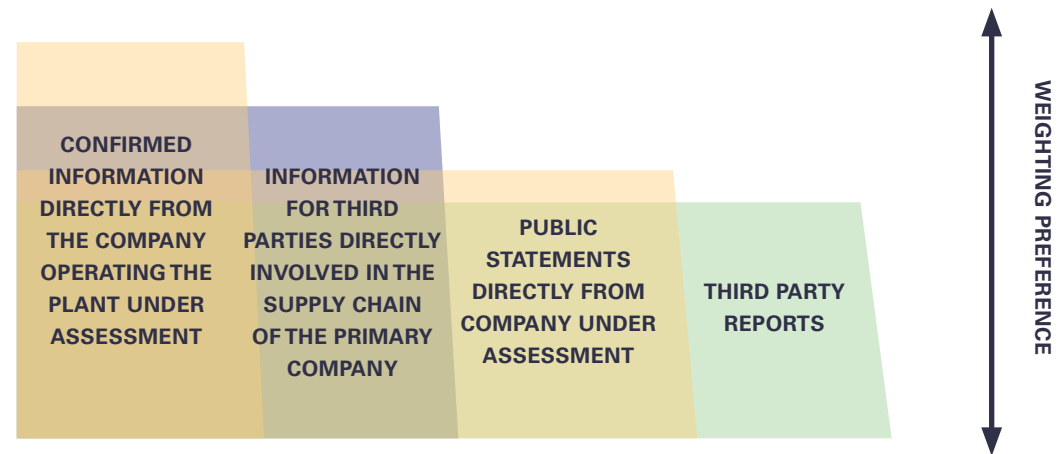
Benchmark Minerals Market Assessments are published in the most common units of measurement used by the industry.

In the lithium ion battery industry, production capacity measurements are most commonly cited in gigawatt hours (GWh).

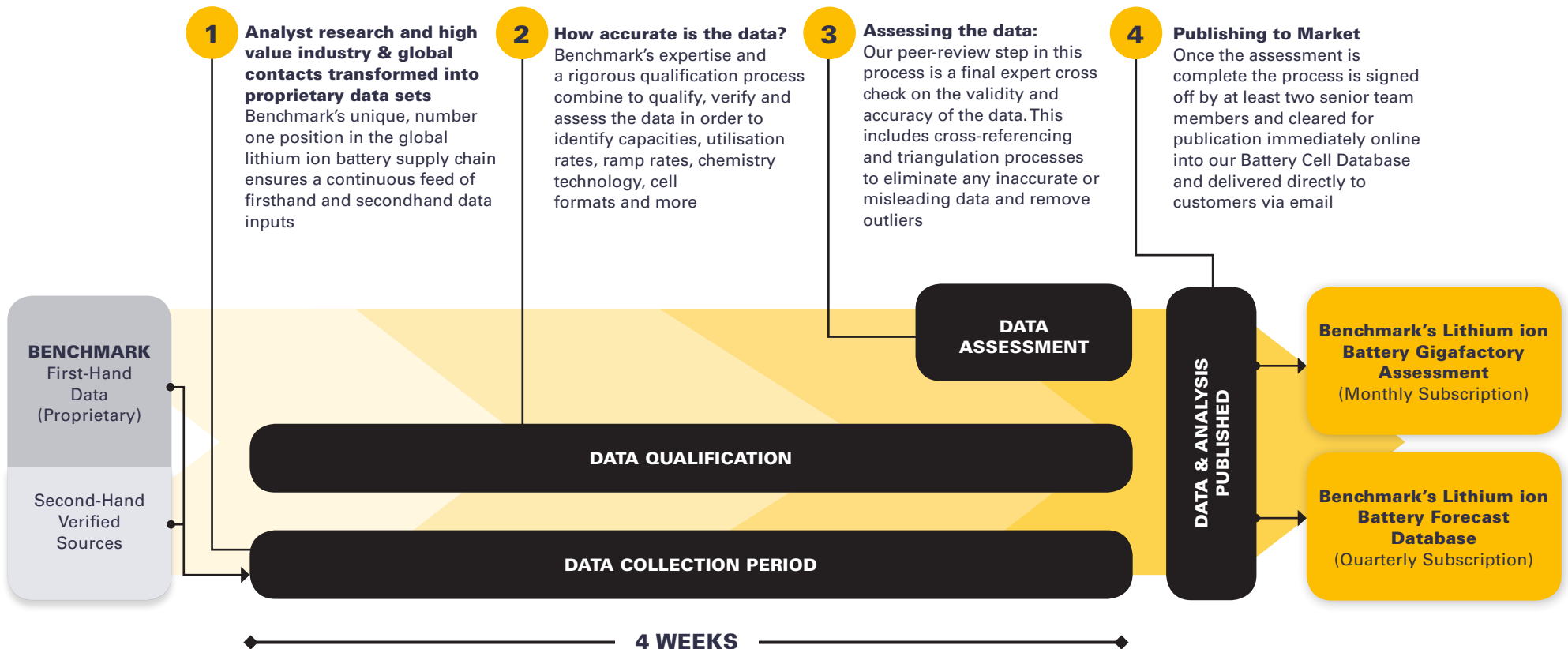
For raw material volumes (i.e cobalt, nickel, lithium etc) measurements are cited in metric tonnes.

These units are those used in the lithium ion battery gigafactory assessment unless otherwise stated.

## INPUT DATA HIERARCHY



## 2. DATA ASSESSMENT PROCESS



## 3. DATA ASSESSMENT

In this section the methodology will review some of the key types of data included in the assessment and how they relate to the market:

### 3.1 LITHIUM ION BATTERY PRODUCTION CAPACITY DATA

Data in the assessment is measured in GWh providing details on active production capacity and forecasts for future available capacities.

The numbers shown reflect the total capacity of the cells that could be produced by the plant on an annual basis (assuming 100% utilisation).

The figures represent capacity at the end of the given year.

### 3.2 TIER DATA

Benchmark Minerals applies a tier ranking to the companies in the assessment.

The purpose of this ranking system is to define battery producers by the qualification level with automakers as well as volume and quality status.

Companies are qualified as tier 1, tier 2 or tier 3, definitions are as follows:

#### Tier 1

- Qualified to supply more than 1 multinational OEM/EV producer outside of China
- >5 GWh of annual cumulative capacity
- Assessed every 3 months

#### Tier 2

- Not yet qualified to supply multinational OEMs/EV manufacturers
- Qualified to supply domestic Chinese EV manufacturers
- Qualified to supply non xEV applications

#### Tier 3

- Not yet qualified to supply EV end markets
- Annual cumulative capacity >1 GWh
- Primary focus non xEV markets including portable and stationary

### 3.3 PRODUCTION CAPACITY BY CATHODE TYPE

As part of Benchmark Minerals assessment of each plant, cathode types are assigned to capacities. This information shows the relative direction of cathode technology for current and future plants.

Where possible information is gathered directly from industry, otherwise Benchmark analysts will use their expertise and supply chain knowledge to make an informed estimate.

Cathode requirements are assigned on a plant-

by-plant basis and aggregated in the monthly assessment to demonstrate the total cathode market share in relation to future forecast battery production capacity globally.

### 3.4 RAW MATERIAL DEMAND

Raw material demand estimates are quoted in metric tonnes. The numbers assume 100% capacity utilisation of all the plants in the assessment and do not constitute a raw material demand forecast.

Benchmark Minerals demand forecast numbers are available via a separate subscription.

For further information on Benchmark Minerals forecast subscriptions please contact: [info@benchmarkminerals.com](mailto:info@benchmarkminerals.com)

## 4. COMPLAINTS AND ENQUIRIES

### 4. COMPLAINTS AND ENQUIRIES

Benchmark Minerals strives to provide the highest standards for any request for information or complaint in order to give the market full confidence in its price assessments.

Any complaints should be forwarded to our dedicated complaints mailbox at:  
complaints@benchmarkminerals.com

All complaints are acknowledged within 3 working days

Complaints handling principles:

- Complaints can come from data providers, subscribers, as well as industry participants.
- Complaints can cover specific data, how the data was compiled, proposed changes to methodology and other editorial decisions taken by BMI.
- BMI has set a timetable and will handle all complaints in a timely and fair manner.
- The inquiry is conducted independently of any personnel who may be subject of the complaint.
- BMI will advise the complainant of the outcome in writing in a reasonable period.

- There is recourse to an independent 3rd party appointed by BMI if a complainant is dissatisfied with the outcome and seeks further recourse.
- All material concerning the complaint and its review are kept by BMI for five years.

## 5. REVISION HISTORY

### 5. REVISION HISTORY

Benchmark Minerals is committed to consistency in data collection and reporting methodology.

Benchmark Minerals regularly reviews its policies and procedures, at least annually, to affirm the appropriateness of its methodologies.

Benchmark Minerals has continual and regular dialogue within the industry which allows it to gather feedback, adjust and refine its policies that ensure:

- Appropriateness of data assessments
- Provision of amendments and or removal of key types of data
- Initiate new assessments to meet market needs

**May 2022:** Updated to include change of naming convention from Megafactory to Gigafactory, job title changes and to add all assessments to company structure chart



## 6. CONTACT US

### MEET THE TEAM



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For complaints or compliance related questions,  
please contact:

**Risk and Compliance Officer**  
**Email: [complaints@benchmarkminerals.com](mailto:complaints@benchmarkminerals.com)**