



Department for
Business & Trade

Automotive Transformation Fund

Evaluation Framework

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Executive Summary

This report sets out the evaluation framework for the process and impact evaluation of the Automotive Transformation Fund. The purpose of the evaluation framework is to guide and support future evaluations by setting out the metrics against which the ATF should be assessed, as well as the evaluation techniques that should be used.

The Automotive Transformation Fund

Whilst the UK has a strong automotive sector, the transition to electric vehicles (EVs) presents significant challenges. To avoid a cliff-edge as conventional internal combustion engine technology becomes obsolete, the UK must ensure that its automotive R&D and manufacturing capability and competitiveness extend to EVs.

There is global competition to secure investment in next generation electric vehicle technology. The UK offers several advantages as an investment destination, including the widespread use of English as the primary global language for business and technology, market stability, and a well-established research and development ecosystem. However, it is less competitive in terms of other factors such as energy costs, land prices, construction costs, and labour costs. High fixed capital costs associated with market entry, coupled with uncertainty regarding the timeframe for returns on investment, serve as significant deterrents to private sector investment.

The **Automotive Transformation Fund (ATF)** has been set up to support the development of an internationally competitive EV supply chain in the UK. This fund underscores the commitment of the UK Government to be at the forefront of the design and manufacture of zero emission vehicles.

The ATF is focused on four priority technology areas: batteries, motors and drivers, power electronics, and fuel cells. It provides financial support through two strands:

- **Support for R&D and feasibility studies**, aimed at generating research to assist businesses in identifying commercial opportunities within the UK EV supply chain, as well as to show investment feasibility through pilot projects.
- **Capital grant funding**, aimed at directly supporting capital investment in the EV supply chain in the UK.

The main objectives of the ATF are to:

- Signal the UK's commitment to the future of the automotive sector and raise the profile of the UK as a location for automotive activity, drawing in private investment.
- Reduce global emissions from the automotive sector.
- Safeguard or grow manufacturing jobs in the UK automotive sector.
- Address and remedy the structural weaknesses in the UK supply chain, helping ensure a secure and resilient supply of key materials and components, and work towards increasing local content in UK built electric vehicles, which will support meeting 'Rules of Origin' requirements, enabling tariff free access to global markets.

The Theory of Change

The **Theory of Change** describes the narrative of how the ATF is expected to transform inputs and activities into outputs, outcomes, and impacts as well as the assumptions and context factors underpinning this transformation. The Theory of Change is summarised by the logic model in Figure 2.

There are three categories of input to the ATF:

- Funding for the support of late-stage R&D and capital investment projects;
- Staff time and expertise to deliver the programme; and
- Industry inputs.

Collectively these inputs drive three groups of activities: support for late-stage R&D, support for capital investment, and wider communication and engagement activities.

The support for capital investment should result in a number of capital projects being approved and completed. This in turn could result in direct jobs and commercial interactions from those projects, increased confidence in the future viability of the UK EV supply chain, and in UK built vehicles being able to access tariff free trade. This may result in more suppliers and OEMs deciding to locate in the UK, creating a self-reinforcing cycle of investment that results in automotive jobs and production being safeguarded through the transition to EVs.

The support for late-stage R&D could similarly result in a number of feasibility studies being completed, which would increase business confidence in manufacturing decisions and enable increased investment in the UK. The wider communications and engagement activities should similarly increase investor awareness of the potential of the UK automotive sector, thereby leading to increased confidence in the UK as an investment destination, facilitating greater investment.

These outcomes could contribute to the desired impacts of the ATF: high quality jobs in the sector being safeguarded (and contributing to levelling up through their geographical spread); the contribution of the automotive sector to exports being maintained; a reduction in global emissions; benefit to other industries and growth from the EV supply chain and R&D spillovers; and the UK continuing to be seen as a leading location for automotive manufacture and R&D.

Process evaluation framework

Process evaluation aims to understand whether an intervention is being implemented as intended, whether the design is working effectively, and what is working more or less well and why.¹ In addition to providing general lessons for similar interventions or rounds of investment in future, the findings from an early process evaluation may produce specific, actionable

¹ HM Treasury (2020), Magenta Book: Central Government Guidance on Evaluation.

insights for process-related changes that could improve the delivery of the ATF during the remainder of the programme.

The process evaluation proposes a set of research questions organised into seven evaluation themes, structured around stages of the delivery process:

1. Design of the ATF.
2. R&D support: application process.
3. R&D support: delivery and monitoring.
4. Capital investment support: application process.
5. Capital investment support: delivery and monitoring.
6. Overall programme delivery.
7. Synthesis.

There are four main sources of data for the process evaluation: **monitoring data collected by the ATF, deliberative workshops with delivery partners and applicants for R&D funds, in-depth semi-structured interviews with applicants for capital support, and a desk-review of other internal reviews.** Qualitative data collected from ATF stakeholders is best suited to addressing open-ended questions and exploring issues in detail, eliciting the causes, mechanisms, and consequences of issues identified.

Impact evaluation framework

Impact evaluation aims to assess what changes have occurred because of a policy, the scale of those changes and the extent to which they can be attributed to the intervention.²

We recommend that the ATF impact evaluation should be theory-based. The complex landscape in which the ATF is being delivered means that it is not feasible to use experimental or quasi-experimental methods, which rely on being able to identify a comparator 'control' group who were not affected by the ATF. Theory based methods do not provide a precise estimate of the size of the impact of a policy – instead the aim is to explore whether the intervention contributed to the measured change in outcomes, and why the policy worked or did not work.

The approach involves drawing on the Theory of Change to develop a set of research questions which can be tested during the evaluation. The research questions identified in the evaluation framework are:

1. Are targets for outputs and outcomes being met? If not, why not?
2. To what extent has the ATF met, or is it on track to meet, longer-term objectives?

² HM Treasury (2020), Magenta Book: Central Government Guidance on Evaluation.

3. To what extent has the ATF enabled wider economic or social benefits?
4. What are the main learning points from the ATF?

The evaluation questions are recommended to be answered using a **combination of quantitative and qualitative data**. Secondary data sources should be analysed to provide evidence on key metrics, and qualitative data from primary data collection should be used to unpick the additionality of the ATF and the wider context of how and why the ATF was (or was not) able to demonstrate the outcomes and impacts intended. The framework also sets out an approach to demonstrating the Value for Money (VfM) of the ATF.

The primary data collection includes: a **survey of applicants for R&D or capital funding support, deliberative workshops, and in-depth semi-structured interviews**.

The recommended evaluation approach consists of three phases:

- A **baselining exercise** in 2023: to collect data as close to 'pre-ATF' as possible, and ensure that appropriate monitoring data is being collected and archived for later.
- An **initial impact evaluation** in late 2024: to examine the evaluation questions set out above, recognising that only short term impacts will have been felt so far.
- A **final impact evaluation** conducted around 2028: to re-examine the final three evaluation questions set out above, given the greater scope for longer term impacts to be have been felt.

1. Introduction

Frontier Economics has been commissioned by the Department for Business and Trade (DBT) to design the process and impact evaluations of the Automotive Transformation Fund (ATF) and to subsequently conduct the process evaluation.³

A **process evaluation** is an assessment of whether an intervention is being implemented as intended, and whether its design and structure are working effectively and why.

An **impact evaluation** is an assessment of what an intervention has delivered. Impact evaluations are described by HM Treasury's Green Book as: 'an objective test of what changes have occurred, the extent of those changes, an assessment of whether they can be attributed to the intervention and, where possible, a comparison of benefits to costs'.⁴

This report sets out the process and impact evaluation frameworks. It is intended to act as a guide for future evaluators and key stakeholders, setting out the objectives of the ATF, the metrics against which success should be assessed, and the evaluation techniques that should be used to understand the extent to which outcomes are attributable to the ATF rather than external factors.

The overall structure of the report is as follows:

- Section 2 describes the ATF, the rationale for programme and the high level objectives.
- Section 3 sets out the Theory of Change detailing how and why the ATF is expected to have its intended impacts.
- Sections 4 and 5 present the process and impact evaluation frameworks respectively. Each section sets out evaluation themes, questions or metrics and approaches, as well as detail on timings and implementation.

³ Government departmental structures were changed in February 2023, meaning that BEIS and DIT no longer exist as government departments. However, references to BEIS and DIT are maintained throughout this report, since these were the departmental structures that were in place during the period covered by this evaluation framework of the ATF.

⁴ HM Treasury (2018), [The Green Book: Central Government Guidance on Appraisal and Evaluation](#), p70

2. Understanding the ATF

2.1 Introducing the ATF

The **Automotive Transformation Fund (ATF)** has been set up to support the development of an internationally competitive electric vehicle (EV) supply chain in the UK and sustain the commitment of the UK to be at the forefront of the design and manufacturing of zero emission vehicles.

The ATF is focused on four priority technology areas: batteries, motors and drivers, power electronics, and fuel cells. It provides financial support to companies through two strands:

- **Funding for R&D and feasibility work**, aimed at providing findings that can be used to help businesses realise commercial opportunities in the EV supply chain in the UK and demonstrate the feasibility to invest through pilot scale projects.
- **Capital grant funding**, aimed at directly supporting capital investment in the EV supply chain in the UK.

The ATF was developed in response to the October 2019 UK Government announcement of funding for EV and supply chain development. This supported the subsequent Conservative Party Manifesto commitment to securing gigafactory investment. In July 2020, the ATF secured £10m of R&D funding for 2020/21, with a further £500m of funding over four years announced as part of the Government’s 10 Point Plan in November 2020. An additional £350m of capital funding was announced as part of the Net Zero Strategy in October 2021, and a further £75m of funding for R&D was announced in January 2022. Figure 1 sets out the timeline of ATF funding decisions.

Figure 1: Timeline of funding decisions for ATF



Source: BEIS

2.2 Rationale for the ATF

The UK has historically maintained one of the strongest automotive sectors in Europe, directly employing 166,000 and supporting an additional 371,000 jobs in other parts of the UK economy.⁵ In 2021, UK manufacturers produced almost 860,000 vehicles and 1.6m engines.⁶

⁵ BEIS analysis of ONS data, March 2023.

⁶ SMMT Motor Industry Facts 2022

Currently the automotive industry is undergoing significant changes as a result of the Government's commitment to reaching Net Zero by 2050 and the associated automotive industry targets established to meet that commitment. The Government has pledged to end the sale of all new petrol and diesel cars and vans by 2030 and has pledged that all new cars and vans in the UK will have zero tailpipe emissions by 2035.⁷ In order to achieve these targets, a shift towards EVs is necessary. BEIS is responsible for elements of this mission.

There is global competition to secure investment in the next generation of vehicle technology and the new supply chains which will anchor EV manufacturing. While the UK is an attractive investment location in many respects, with the benefits of the English being the primary global language for business and technology, market stability, and a well-established research and development ecosystem, it is less competitive in terms of other factors such as energy costs, land prices and labour costs. There are also high fixed capital costs, low profit margins on vehicle production, coordination failures, demand uncertainty, a lack of information among companies, and uncertain and lengthy timescales for reward that discourage private investment in the sector.⁸

The UK Government therefore wants to support the automotive sector to make sure that the UK maintains its competitive advantage and achieves a successful transition to EVs, thereby avoiding a cliff-edge as conventional technology becomes obsolete.

The ATF is intended to complement a number of other government funding programmes that aim to encourage technological developments and assist the transition to electric vehicles, including the Faraday Battery Challenge (FBC)⁹, the Advanced Propulsion Centre R&D competitions¹⁰, the Driving the Electric Revolution Challenge (DER)¹¹ and the Office for Zero Emissions Vehicles grants portfolio¹². The ATF is distinct in that it comprises capital support for product manufacture as well as support for R&D. The R&D supported by the ATF is at a higher technology readiness level than R&D supported by FBC or DER, and is focused on particular priority technology areas.

2.3 Objectives of the ATF

The aims of the ATF are¹³:

⁷ See

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005301/transiting-to-zero-emission-cars-vans-2035-delivery-plan.pdf

⁸ Information obtained through stakeholder engagement.

⁹ <https://www.ukri.org/what-we-offer/our-main-funds/industrial-strategy-challenge-fund/future-of-mobility/faraday-battery-challenge/>

¹⁰ <https://www.apcuk.co.uk/funding/collaborate/>

¹¹ <https://www.ukri.org/what-we-offer/our-main-funds/industrial-strategy-challenge-fund/future-of-mobility/driving-the-electric-revolution-challenge/>

¹² <https://www.gov.uk/government/collections/government-grants-for-low-emission-vehicles>

¹³ From BEIS 2021 Full Business Case for Automotive Transformation Fund – Supply Chain (ATF SC)

ATF Evaluation Framework

- to secure the transformation of the UK automotive sector at scale and pace by developing and embedding the next generation of cutting-edge automotive technologies;
- to retain or better the current economic benefits and trade flows;
- to ensure that the UK retains its technological leadership position throughout this transformation.

The main objectives of the ATF are to:

- Signal the UK's commitment to the future of the automotive sector and support the transition to zero emission vehicles through raising the profile of the UK as a location for automotive activity and private investment.
- Support the UK's role in tackling climate change by reducing global emissions from the automotive sector.
- Safeguard or grow manufacturing jobs in the UK automotive sector. This includes the creation of skilled, well-paid jobs for the design and manufacture of next generation vehicle technologies, offsetting losses which will be expected to occur as production of ICE vehicles declines.
- Address and remedy structural weaknesses in the UK supply chain, helping ensure a secure and resilient supply of key materials and components, working towards increasing local content in UK built electric vehicles. This will support meeting 'Rules of Origin' requirements, enabling tariff free access to global markets.

While there are several objectives here, they are all largely overlapping. The overarching objective is the safeguarding of manufacturing jobs. For this to be achieved, it is necessary for private investment to be drawn in (the sector cannot be supported by public investment alone) and tariff free access to global markets needs to be secured (otherwise vehicle manufactures will not locate in the UK). If jobs are safeguarded, then trade flows would be retained, as the UK would not consume the number of vehicles such manufacturing jobs would create and global emissions would fall as the UK has a relatively low emission electricity grid.

3. The Theory of Change

This section sets out the Theory of Change for the ATF. A Theory of Change describes how a policy expects to transform inputs and activities into outputs, outcomes and impacts.¹⁴ It clearly articulates the critical pathways between these elements and the assumptions underpinning these pathways. Importantly, a Theory of Change is explicit about the institutional and policy context of the intervention, external enablers and barriers, and the expected timeframe over which outputs, outcomes and impacts are expected to occur.

In an evaluation context, such as a theory-based evaluation, the Theory of Change is critical to inform the evaluation approach. It helps shape the evaluation design and the questions the evaluation seeks to address, the wider factors necessary to isolate the impact of the ATF, the timing of the evaluation, and the groups or stakeholders who may need to be consulted or involved to provide data and evidence.

This section starts with an overall presentation of the logic model, which is a visual summary of the Theory of Change. The following sections then describe each stage of the logic model in more detail, before a discussion of wider external enablers and barriers, and timing.

Appendix A describes the approaches used to develop and test the logic model and Theory of Change, including a document review, stakeholder consultations and validation workshop.

3.1 Logic model

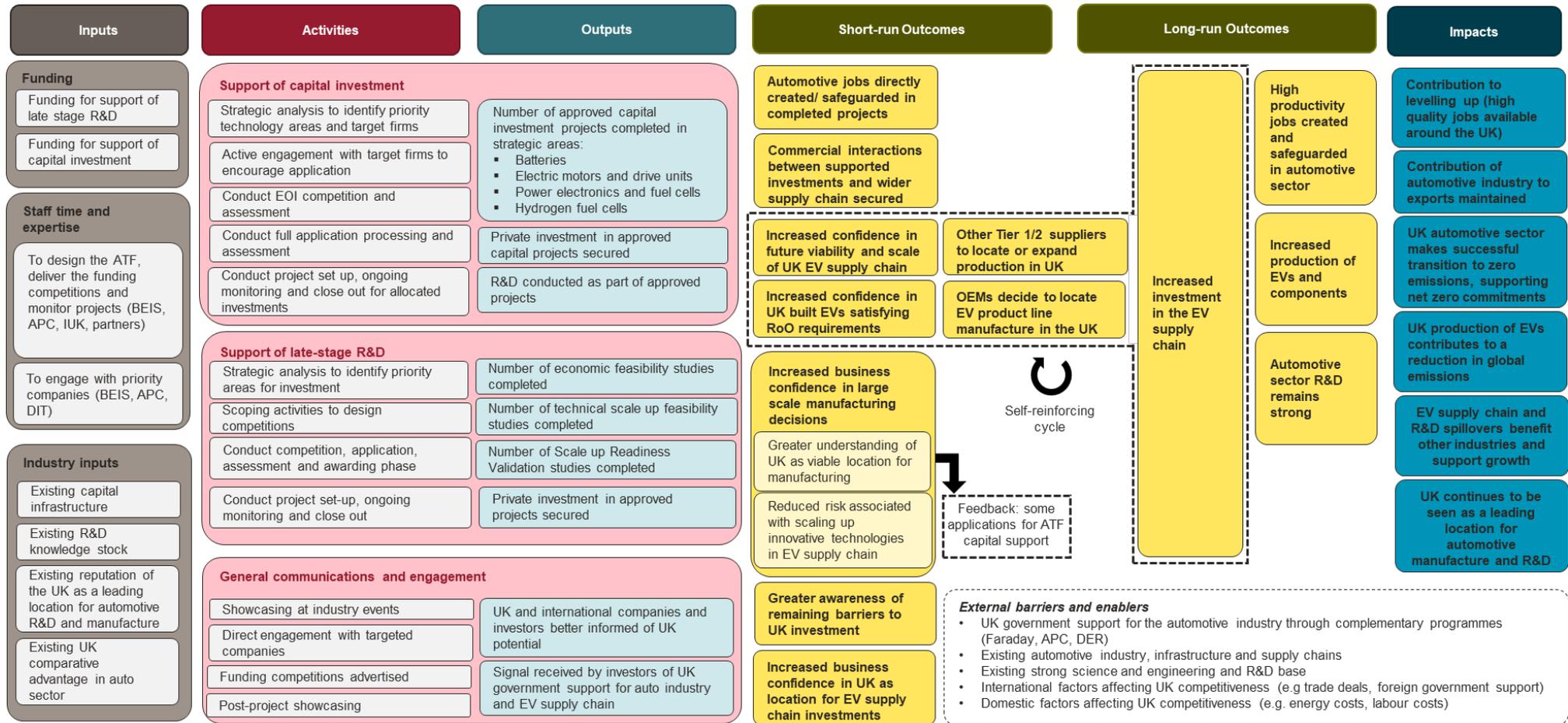
The logic of the ATF can be divided into five stages:

- Inputs: the time, money, and support required to conduct the programme.
- Activities: the day-to-day activities of the ATF and delivery partners.
- Outputs: the observable and tangible results of the programme.
- Outcomes: the specific changes in behaviour that the ATF aims to deliver.
- Impacts: the ultimate objectives of the programme, including intended and unintended consequences.

The logic model is presented in Figure 2.

¹⁴ A Theory of Change is recommended as best practice in UK government guidance on ex-post evaluation. HM Treasury (2020), The Magenta Book: Central Government guidance on evaluation, <https://www.gov.uk/government/publications/the-magenta-book>

Figure 2: ATF logic model



Source: Frontier Economics

Inputs

There are 3 broad classes of inputs into the ATF: public funding, staff time and expertise, and industrial inputs.

Public funding

Total public funding provided to the ATF is currently expected to be approximately £844m over the period 2021 to 2025. This funding comprises:

- £106m of funding for late-stage R&D support;
- £738m of funding for capital investment support.

If actual spending were to turn out higher or lower than this, the number of activities and outputs would be expected to be accordingly higher or lower.

Staff time and expertise

The ATF draws on the expertise and staff time of 6 delivery partners:

- BEIS: who manage the overall programme and ensure that the ATF continues to operate in line with the objectives of government policy.
- Advanced Propulsion Centre (APC): who are the main delivery partner. APC are involved with most of the activities concerned with delivering the ATF (set out in more detail in the following section).
- Innovate UK (IUK): who operate the funding competitions through their Innovation Funding Service portal.
- Department for International Trade (DIT) and the Office for Investment (OFI): who are involved in engagement activities with international firms and investors.
- BEIS Central Grants and Loans (CGL): who conduct appraisal of the projects that make full applications for capital investment support, and ongoing monitoring of supported capital projects during and after the life of those projects.

Representatives from all of these groups are on the ATF Programme Delivery Board, which reviews programme delivery progress and makes recommendations on investment decisions.

Industrial inputs

In addition to the explicit ATF programme inputs, there are also wider industrial factors that input into the activities of the policy. This includes existing R&D capacity, capital infrastructure and workforce skills related to the EV supply chain, existing comparative advantage in the automotive sector, and the existing reputation of the UK as a leading location for automotive manufacture and R&D.

Activities and outputs

The above inputs deliver a set of activities that are grouped into three classes: activities to support capital investment, activities to support late-stage R&D, and general engagement activities. Since these classes of activities are largely associated with particular outputs, we outline activities and outputs together.

Support of capital investment

The vast majority of ATF funding is earmarked for investment in capital projects. There are five main sets of activities involved in providing this support:

- **Strategic analysis.** A key underpinning of the ATF is a strategic prioritisation exercise conducted by APC. This identified a list of priority technology areas that are deemed to be the most strategically important parts of the electrified supply chain: batteries, electric motors, drives, power electronics, and hydrogen fuel cells. Potential capital projects need to be within the scope of one of these strategic technology areas in order to seek funding through the ATF. The strategic prioritisation exercise is updated if circumstances change significantly – for example, if the overall funds of the APC change, since a change in the resources available may prompt a change in priorities. In addition to identifying the priority technology areas, strategic analysis is also used to identify target companies within those areas who are expected to be better able to deliver commercially in the UK.
- **Active engagement.** Companies that are identified as targets are actively engaged with by ATF stakeholders. BEIS and APC meet with senior representatives from these companies to discuss the benefits of locating in the UK and highlight the opportunities presented by the ATF.
- **Expression of interest competition.** The first stage of the process for applying for funding for capital investment is through an Expression of Interest (EOI) competition. This has been run monthly since July 2020. Applications are checked for being in scope and are then assessed by APC and appointed assessors, being given both a technical and strategic importance score. Recommendations are made to the ATF programme board, who then approve or reject applications.
- **Full application phase.** Applicants that successfully pass the EOI stage receive assistance from APC to review their EOI application and from CGL to understand the full application process, and can choose to make a full application. This is developed with assistance and guidance from CGL. After appraisal, successful projects must undertake a due diligence exercise.
- **Project set-up, ongoing monitoring and close out.** Successful applicants then go through a project set-up phase. Each project is assigned a monitoring officer from CGL and a project delivery lead from APC, and throughout the duration of the project they will review the project on a quarterly basis.

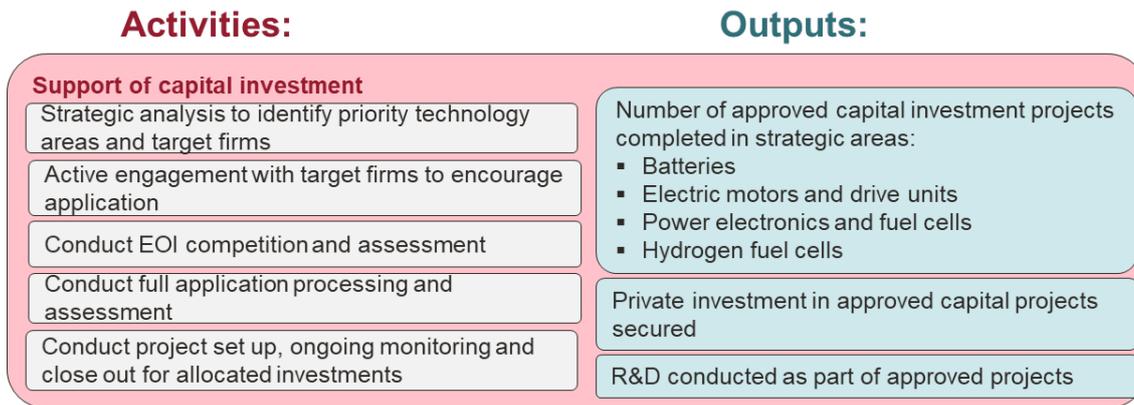
These activities are expected to result in two main outputs: a number of capital investment projects completed across the strategic priority technology areas, and an amount of private investment in these capital projects that is secured in addition to the funding provided through the ATF (which is limited to only a proportion of total project costs). It is also expected that some of those delivered capital projects will encompass a component of R&D. The quantity and scale of capital projects completed will be directly related to the total amount of funding that is made available through the ATF.

The Full Business Case prepared by BEIS set out an indicative list of investments. It sees the potential for the realisation of 26 capital projects, providing a private leverage ratio on average of 8.5 (£8.5 invested in the UK for every £1 spent by the ATF).

Maintained assumptions

The activities set out above would only result in a number of capital investment projects being completed, and across the range of strategic priority areas, if private sector companies across these areas are aware of the funding opportunity, and then apply to the ATF for funding and successfully complete their projects. This is not directly under the control of the ATF delivery team and will depend on the wider circumstances facing businesses (particularly given that only a proportion of total project costs will be covered by ATF funds), including the support offered in alternative countries.

Figure 3: Support of capital investment: activities and outputs



Source: Frontier Economics.

Support of late-stage R&D

The ATF provides financial support for late-stage R&D through open funding competitions. Generally supported projects are at technology readiness level 5 and above. To date there have been four funding competitions, the timing of which is illustrated in Figure 4. Through these four competitions, the ATF has sponsored a total of 115 R&D projects, including technical and business case feasibility studies, and more recently Scale Up Readiness Validation (SURV) projects.

Figure 4: Timing of R&D competitions



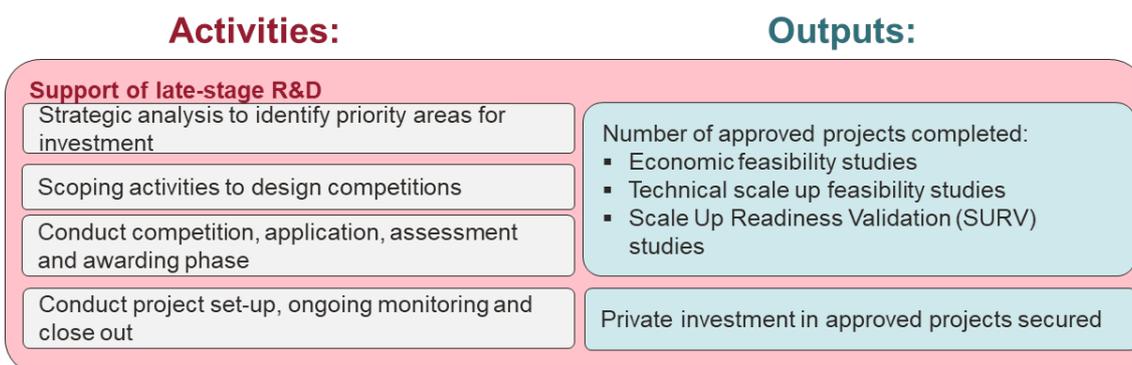
Source: Published funding competitions on the Innovation Funding Service website.

In conducting these competitions there are three main sets of activities:

- **Scoping phase.** ATF delivery partners consult with industry to understand what is needed from its competitions, and decide what stage R&D will be supported by any given funding competition, and any other constraints or guidance on what funding will be made available. Competitions are designed in the context of the overall strategic prioritisation exercise that is conducted periodically by APC (discussed in more detail above), which identifies the technology areas that are considered as priorities for investment and therefore in scope for funding.
- **Competition, application assessment and awarding phase.** The competitions themselves are managed by IUK through their Innovation Funding Service portal. Once applications are submitted there is an initial check to ensure that the applications meet the scope of the competition. Then applications are sent to independent assessors for scoring against stated criteria. In some cases, an overall strategic portfolio review is also conducted before successful applicants are determined and notified.
- **Project set-up, ongoing monitoring and close out.** Successful applicants then go through IUK’s project set-up phase. Each project is assigned a monitoring officer from IUK and a project delivery lead from APC, and throughout the duration of the project they will review the project on a quarterly basis.

There are two main immediate outputs of these activities: a number of R&D projects that are completed (which could be economic feasibility studies, technical feasibility studies, business case feasibility studies or SURV projects), and an amount of private investment in these projects that is secured in addition to the funding provided through the ATF (which is limited to only a proportion of total project costs). The quantity of these outputs will be directly related to the total amount of funding that is made available for R&D support through the ATF.

Figure 5: Support of R&D: activities and outputs



Source: Frontier Economics.

Maintained assumptions

The activities set out above would only result in a number of feasibility studies being completed if private sector companies are aware of the funding opportunity and

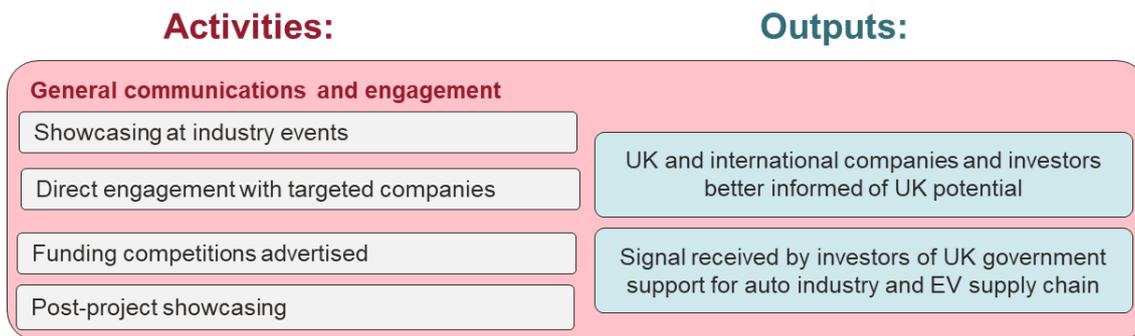
subsequently apply to the ATF for funding. This is not directly under the control of the ATF delivery team and will depend on the wider circumstances facing businesses (particularly given that only a proportion of total project costs will be covered by ATF funds). The outputs require successful completion of the R&D projects.

Communication and engagement

ATF delivery partners undertake many different forms of communication and engagement activities. While many of these are directly associated with attracting applicants for R&D and capital investment support, this is not exclusively the case, and there are spillovers of even those targeted communications onto other firms and investors who do not seek financial support from the ATF. These communication and engagement activities are therefore separated out in the logic model as a third set of activities with their associated outputs.

There are two main outputs of these activities (aside from any applications to the ATF). The first is that UK and international companies in the EV supply chain and wider automotive industry become better informed of the potential of the UK as a place to locate activity. The second is that there is a signal received by companies and investors that the UK government is engaged with and prepared to support the EV supply chain and automotive industry.

Figure 6: Communication and engagement: activities and outputs



Source: Frontier Economics.

Maintained assumptions

The main assumptions required for these outcomes is that the UK government continues to provide a clear signal of intent to support the needs of the automotive industry, and that companies are receptive to the communication strategies used.

Outcomes

The activities of the ATF are all expected to contribute to the intended policy impacts, but through slightly different outcome pathways. These are therefore discussed in turn.

Support of capital investment

The outputs from the support of capital investment are a number of investment projects that are completed and the private investment that those incorporate.

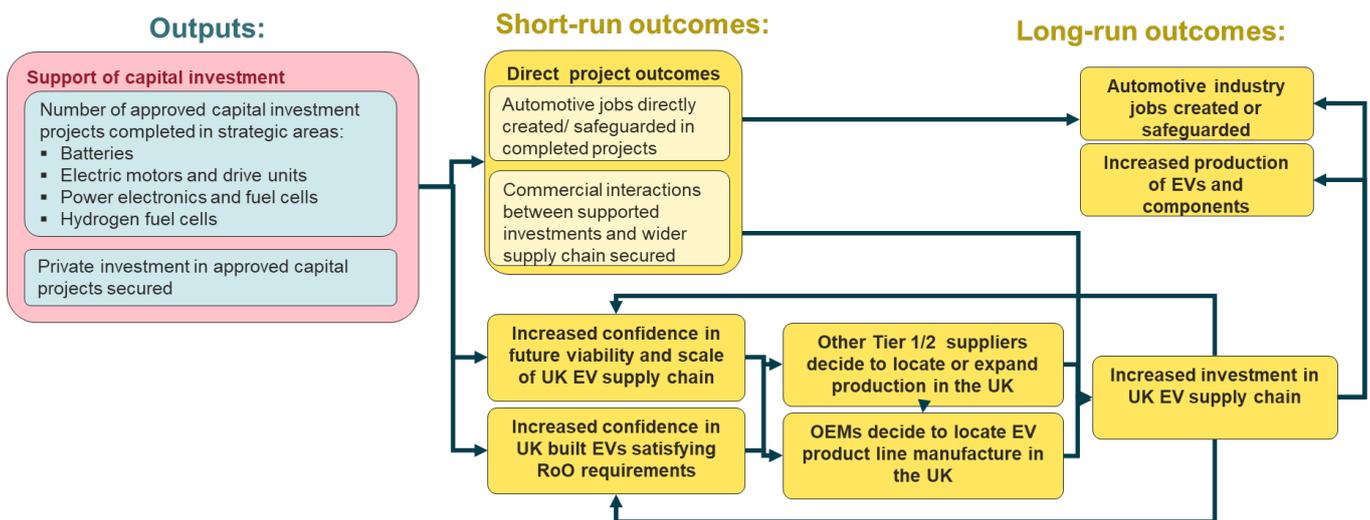
These completed projects would have direct outcomes. They would directly provide a number of jobs in the automotive sector, and they would have direct commercial links with the wider supply chain. For example, suppose the capital investment project was a Gigafactory. Once up and running, workers would be employed in the factory, and the company would have contracts in place to purchase inputs (e.g., anode and cathode materials) and to sell the batteries produced.

The completed projects would also have more indirect outcomes. In particular, they would increase confidence in the future scale and viability of the electric supply chain in the UK, and therefore increase confidence that electric vehicles manufactured in the UK in future would be able to satisfy Rule of Origin requirements. This increased confidence would be among both firms in the sector and among investors who the sector might look to for funding.

Over time this could result in a self-reinforcing cycle of outcomes: the increased confidence leads to more Tier 1 and 2 suppliers to decide to locate or expand production in the UK and to more OEMs to decide to manufacture more vehicles in the UK; this feeds back into greater confidence across the whole supply chain, which results in further investment in the supply chain. In the longer-term the electric vehicle supply chain becomes securely anchored in the UK, increasing numbers of electric vehicles and their components are produced and automotive industry jobs are created or preserved.

The extent to which these indirect outcomes occur will depend on all the completed capital investment projects, their perceived importance and scale, and expectations about the growth of the supply chain and future vehicle manufacture.

Figure 7: Support of capital investment: outcomes



Source: Frontier Economics.

Maintained assumptions

While the outcomes described here logically follow from the outputs of the ATF, they are not guaranteed.

The capital investment projects would only lead to the direct benefits described (jobs and commercial links) if they are commercially successful and there are suitable suppliers and customers available. This should be the case, however, as the company undertaking the investment would need to convincingly demonstrate this in order to secure funding from the ATF.

The indirect short-term outcomes, and the self-reinforcing cycle of increasing confidence and increasing investment, will depend on a sufficient scale and breadth of the supply chain developing. This will depend on the full set of investments supported by the ATF (which will in turn depend on the amount of funding that is input), as well as on other investments undertaken by industry over the period.

A crucial implicit assumption is that the UK is fundamentally a competitive place for an electrified automotive industry to operate, and that the reasons that this industry does not develop on its own are down to market failures (including coordination failures, information uncertainties, a lack of access to capital, and subsidies provided by foreign governments). If this is the case then the ATF can lead to a successfully established supply chain by providing access to capital in the short term, and increased confidence for investors, greater coordination and reduced uncertainty that will persist in the longer term. If instead the UK is not a competitive place in the absence of government support then a wider supply chain outside of the directly supported investments is far less likely to develop.

Support of late-stage R&D

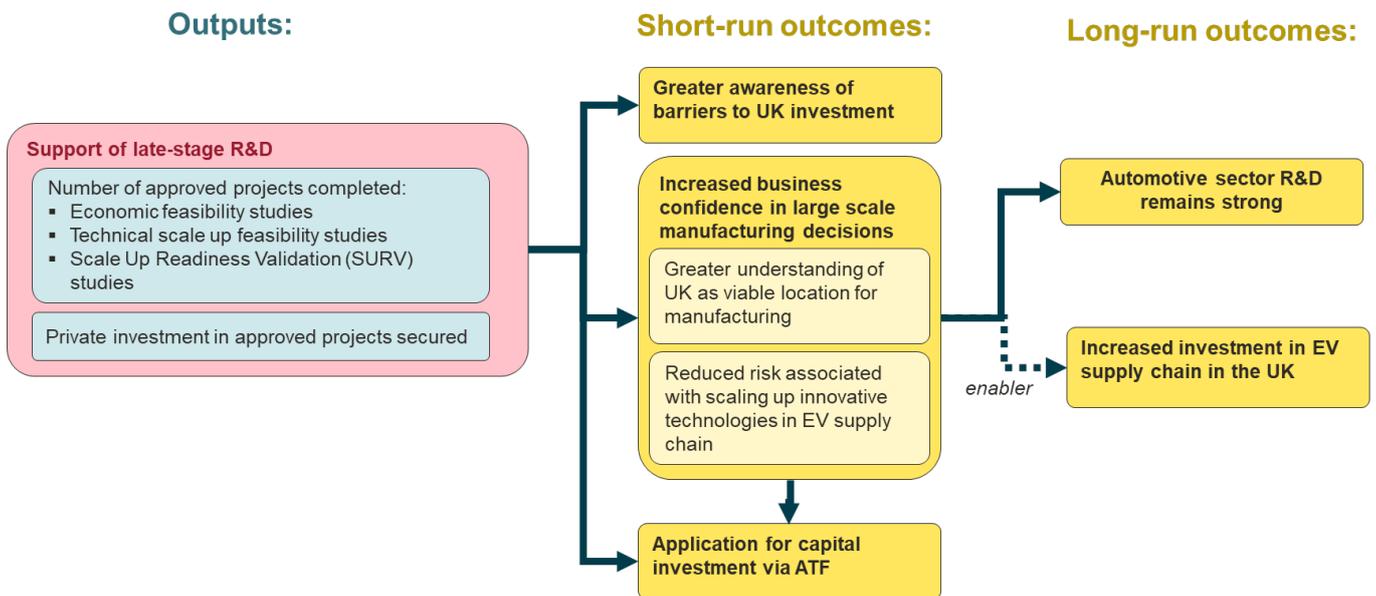
The outputs from the support of late-stage R&D are a number of completed projects – either economic feasibility studies, technical scale up feasibility studies, business case feasibility studies or scale up readiness validation projects – and the private investment that they incorporate. This is expected to lead to three main outcomes in the short term:

- **Increased business confidence in large scale manufacturing decisions.** This will arise because: some SURV projects and technical scale up feasibility studies would indicate the viability of introducing innovative technologies at scale in, thus reducing the uncertainty and risks associated with these investments; and some economic and business case feasibility studies would prove the viability of the UK as a location for manufacturing activity, increasing the confidence with which companies can invest in the UK.
- **Greater understanding of the barriers facing technological scale up or the location of activity in the UK.** To the extent that the feasibility studies reveal that innovative technologies are currently not viable at scale, or that the UK is not a viable location for investment, they would also reveal why this is the case. This would increase understanding, particularly among policy makers, of the barriers that remain, and may feedback into the design of future funding competitions.

- **Applications for capital investment via the ATF.** Some feasibility studies would demonstrate the viability of the UK as a location for activity and result in firms seeking support for that investment through the ATF.

Over the longer-term, this increased confidence would be expected to lead to increased investment in the electrified supply chain in the UK. This is expected to be a longer term outcome, rather than a short term outcome, because investment decisions of firms takes time. While the feasibility studies may prove the viability of a technology or the UK as a location, other locations may also be viable, and therefore a decision to locate activity in the UK may not immediately follow.

Figure 8: Support of R&D: outcomes



Source: Frontier Economics.

Maintained assumptions

For the support of late-stage R&D to result in applications for capital investment via the ATF, an increase in business confidence in investment decisions, and the long-run outcomes set out in Figure 8, this requires the feasibility studies to sometimes yield a ‘positive’ result (i.e. that the technology can be viably adopted at scale, or that the UK is a viable location for manufacturing). The greater the number of feasibility studies that indicate that this is the case, the greater the chance of a self-reinforcing cycle of increased investment in the supply chain in the UK, as set out in Figure 7.

The support of late-stage R&D would result in greater awareness of barriers to UK investment if the feasibility studies sometimes yield a ‘negative’ result (i.e. that the UK is not a viable location) and the ATF delivery team take time to learn from those findings to inform policy both for future delivery of ATF and more broadly.

Communication and engagement

The communications and engagement activities of the ATF would be expected to result in firms applying to the ATF for support for capital or R&D projects. In addition, the signal that the UK government is supporting the industry, and greater awareness of the features of the UK market, could lead to greater general business confidence in the UK as a location for investments in the automotive industry and electrified supply chain. While this alone may not directly lead to increased investment, it would be an enabler of the general cycle of increased confidence and investment discussed as arising as an outcome from the capital investment support (as in Figure 7).

Figure 9: General communications and engagement: outcomes



Source: Frontier Economics.

Maintained assumptions

The main assumption required for these outcomes is that companies and potential investors in the UK view government communications and policies as a factor in their investment decisions.

Impacts

The pathways between the long-term outcomes set out above and the high-level impacts of the ATF are illustrated in Figure 10.

The increased investment in the electrified supply chain would lead to jobs in the sector being created or safeguarded. If these jobs are located outside of London and the South East (as would be expected given the current geographical distribution of the automotive industry), this could contribute to levelling up by maintaining or increasing the availability of high quality jobs around the UK.¹⁵

The increased production of EVs and components would result in exports, as production would exceed UK demand for the type of vehicles produced. If the UK continues to have a less carbon intensive grid and lower heat production than alternative production locations for

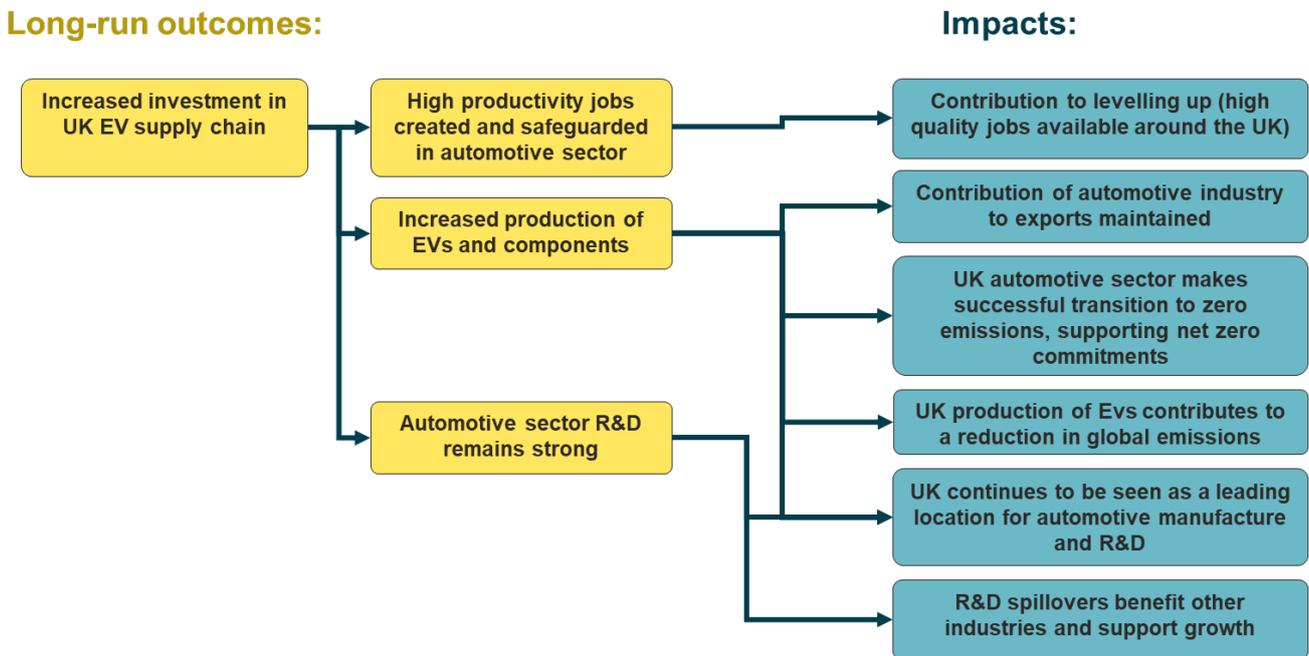
¹⁵ The 2021 business case for the ATF illustrated the current regional distribution of the automotive sector (in terms of value added).

electric vehicles, this would result in a lower level of global emissions than if the same volume of electric vehicles had been produced elsewhere.¹⁶

The increased production of EVs and components, and the continued strength of the R&D sector, mean that the UK could continue to be seen as a leading location for automotive manufacture and R&D. The sector would continue to successfully grow without Government financial support.

There would also be impacts beyond the automotive industry. R&D is likely to generate knowledge spillovers that increase productivity in other sectors. The electrified supply chain that develops would also serve other industries beyond the automotive sector, such as the aerospace industry, further facilitating growth in these sectors.

Figure 10: Outcomes and impacts



Source: Frontier Economics.

Maintained assumptions

The impacts set out above logically follow from the long-run outcomes identified from the ATF but rely on a number of implicit assumptions.

The contribution of the ATF to levelling up will depend on the automotive sector jobs that are created or safeguarded being distributed around the UK. This may not necessarily be in the same locations where the automotive industry is currently located, though there are

¹⁶ The 2021 business case for the ATF made the case that the UK current has a lower carbon intensive grid than likely alternative production locations using data from the United Nations Framework Convention on Climate Change (UNFCCC).

likely to be strong overlaps where existing UK manufacturers are able to transition from ICE vehicle production to electric vehicle production in their existing facilities.

For the UK production of electric vehicles to result in lower global emissions than if those vehicles had been produced elsewhere it is assumed that the UK continues to have a less carbon intensive grid and lower heat production than alternative production locations.

R&D in the automotive sector will only benefit other industries and support growth if the R&D results in new innovations that improve productivity.

3.2 Wider enablers and barriers

The above sections set out the pathways through which the activities of the ATF are expected to lead to immediate outputs, short and longer term outcomes, and high-level impacts. The assumptions that are maintained in order for the logic of these pathways to hold are also highlighted. Here we discuss enablers and barriers to these pathways – contextual factors that are outside of the control of the ATF delivery team that will affect the extent to which outputs, outcomes, and impacts are realised.

Enablers

Enabling factors, which are expected to increase the likelihood that the ATF has the expected benefits, include:

- **Complementary government programmes.** There are numerous government programmes that are likely to be complementary to the ATF. These include financial support for the development of battery technology through the Faraday Battery Challenge, and for the electrification technologies, including power electronics, electric machines and drives (PEMD) through the Driving the Electric Revolution Challenge. This is likely to increase the attractiveness of the UK to companies developing these technologies, as well as reinforcing the R&D ecosystem and commercialisation pathways.
- **Existing industry.** The UK already has a successful automotive sector. While there are challenges with transitioning to electric vehicle production, the UK benefits from having companies with large manufacturing bases that can be re-purposed, existing supply chains for components that serve both ICE vehicles and electric vehicles, and existing skilled workers and the facilities for continuing to train new workers. The composition of the existing industry is also advantageous. A large proportion of the UK automotive industry is made up of smaller, high value manufacturers who are well placed to be early adopters of new technology.
- **Strong science and engineering base.** The UK has a strong science and engineering base and is a world renowned location for R&D, including in the automotive sector. This is an attractive ecosystem for firms wanting to invest in EV related R&D.

Barriers

The main crucial barrier, which could reduce the likelihood that the ATF realises the expected benefits, is the competitiveness of the UK as a location for manufacturing activity. There are two sets of factors that are relevant here:

- **International factors.** The UK is not the only country where the government is offering financial incentives for companies who invest. The financial support offered by foreign governments for companies to locate production in their countries may outweigh the benefits offered by the UK – particularly if the amount of public support offered is greater or if foreign governments are less risk averse and place fewer conditions on companies seeking to secure investment. This could both reduce the number of companies that seek support through the ATF to invest in the UK and reduce the likelihood that other unsupported companies would subsequently choose to locate in the UK.
- **Domestic factors.** This includes factors such as labour costs, construction costs, energy costs, and taxes that may put the UK at a competitive disadvantage relative to other countries. The factors may prove a barrier to companies choosing to locate in the UK that is not overcome by the ATF.

Risks

Related to these enablers and barriers, it is worth highlighting four particular risks that may mean that the ATF fails to have the impact intended despite the logical pathways set out above.

- **Timing.** The ATF funding that has been granted by HM Treasury requires support for capital investment to be paid over the period 2022 to 2025. This means that companies and the ATF delivery team need to act relatively quickly if they are to secure funding. This may not be possible for some companies given the wider circumstances facing their business.
- **Budget.** The budget may not be large enough to sufficiently incentivise some large strategic investments to locate in the UK or to land a sufficient breath of these investments to result in the self-sustaining supply chain development that is expected.
- **Constraints on public investment.** There are constraints on the use of public resources that ATF is subject to in the same way as all other government investments. This could preclude investment in riskier technologies or riskier companies that might otherwise make sense on strategic grounds. If these investments take place elsewhere and prove to be successful then the UK could be at a disadvantage in future.
- **Government policies.** The UK Government has set ambitious targets on the phase out of new ICE vehicles. Changes to this timetable could, depending on the direction, be an enabler or a barrier to the ATF. If the timetable is delayed then this would reduce the incentive for firms to invest quickly in the EV sector. More importantly, changes to this timetable (or other policies in the EV space) could increase uncertainty, which may deter investment in the UK.

3.3 Timing

The previous subsections discussed the outputs, outcomes and impacts that would be expected to be observed as a result of the ATF. Here we consider the timing of these, which was informed through stakeholder and expert consultation (see Appendix A for more detail). The expected timing is summarised in Figure 11.

The outputs – the R&D and capital investments supported by the ATF – would be expected to be observed over the period 2020 to 2025, as this is the period over which HM Treasury has allocated funding to the ATF.

The outcomes expected from the support of R&D – increased business confidence in investment decisions and increased awareness of barriers to investment in the UK – would also be expected over the period 2021-2025 as the feasibility studies are completed.

Confidence in the UK as a location for investment, in the future scale of the EV supply chain, and of UK built EVs satisfying rule of origin requirements, would start increasing with the introduction of the ATF, but would increase over time as more outputs are produced and as the outcomes start re-enforcing one another.

The capital projects supported by the ATF are likely to start becoming productive in late 2023. From then on there would be a gradual increase in the direct outcomes of these investments – the jobs and commercial interactions they create – until all the projects are operational, which is likely to be shortly after the end of the ATF programme.

The number of other Tier 1 and 2 supplies and OEMs deciding to invest in the UK is likely to increase over the mid-2020s, and the jobs, production and investment of the EV sector would be expected to build over time. The intended impacts of the policy would appear gradually over time, with the expansion of the sector.

Figure 11: Timing of outputs, outcomes and impacts

4. Process evaluation framework

4.1 Introduction

Process evaluation aims to understand whether an intervention is being implemented as intended, whether the design is working effectively, and what is working more or less well and why.¹⁷

Conducting a process evaluation during the life of the ATF has the benefit that it may produce specific, actionable insights for process-related changes that could improve the delivery of the ATF during the remainder of the programme. In addition, the process evaluation will provide more general lessons for similar interventions or rounds of investment in future. Insights from a process evaluation can also be useful to understand whether processes around the ATF are supporting or hindering delivery of intended impacts, and therefore inform impact evaluation.

This section presents a framework for evaluating the processes of the ATF. It builds on the description of the policy set out in Section 2, and a detailed process map that was developed (through desk research and discussions with ATF delivery partners) and is provided in Appendix B. The evaluation themes to be examined are set out in Section 4.2, followed by the evaluation methods (Section 4.3) and the timing of the evaluation (Section 4.4).

4.2 Process evaluation themes

The process evaluation is organised into seven evaluation themes, structured around stages of the delivery process. This is illustrated using a high level process map in Figure 12.¹⁸ The evaluation themes are:

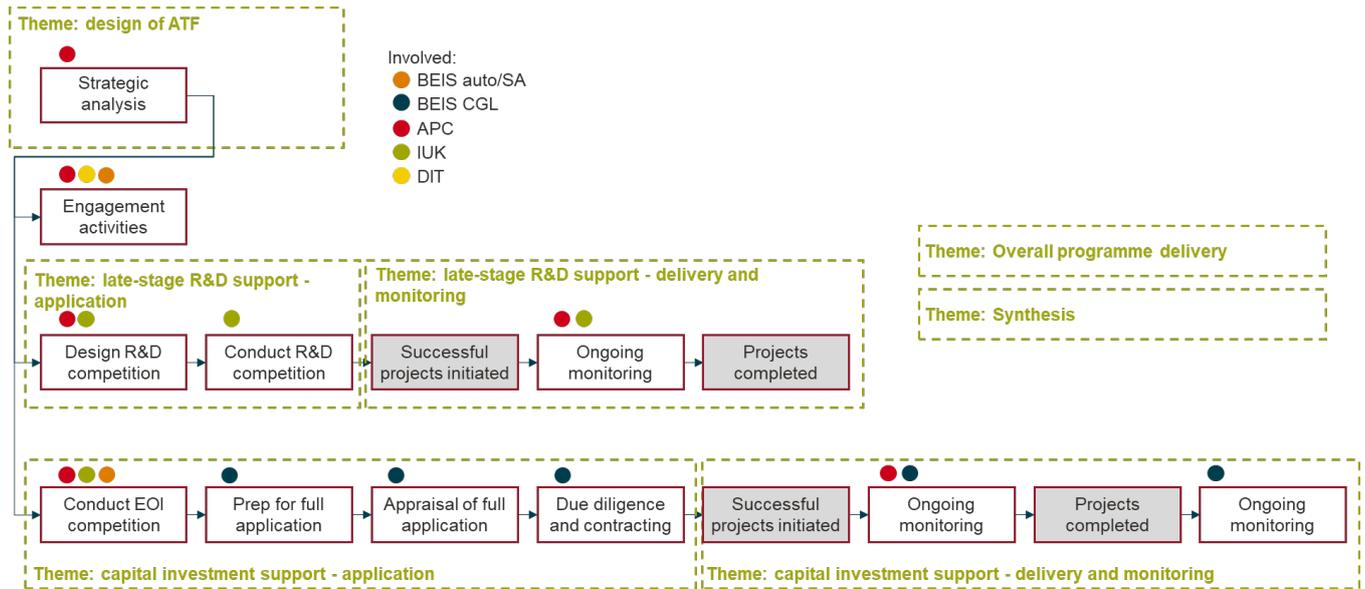
1. **Design of the ATF.** This theme focuses on the overall design of the ATF, with a particular emphasis on the effectiveness of the strategic analysis process.
2. **R&D support: application process.** This theme aims to understand the effectiveness of the application process to the R&D strand of the ATF, in particular whether it is attracting appropriate interest and whether the process is perceived to be fair and proportionate.
3. **R&D support: delivery and monitoring.** This theme aims to understand whether the delivery and monitoring of the R&D strand of the ATF is effective and proportionate.
4. **Capital investment support: application process.** This theme aims to understand the effectiveness of the application process to the capital strand of the ATF, in particular whether it is attracting appropriate interest and whether the process is perceived to be fair and proportionate.
5. **Capital investment support: delivery and monitoring.** This theme aims to understand whether the delivery and monitoring of the capital strand of the ATF is effective and proportionate.

¹⁷ HM Treasury (2020), Magenta Book: Central Government Guidance on Evaluation.

¹⁸ A more detailed process map is provided for reference in Appendix B.

- 6. **Overall programme delivery.** This theme focuses on the overall effectiveness of the ATF, with a particular emphasis on how well the ATF delivery partners have engaged internally and externally.
- 7. **Synthesis.** This theme provides a synthesis of ATF processes, with a particular focus on learnings and recommendations for future process-related changes.

Figure 12: High level process map and evaluation themes



Source: Frontier Economics.

The research questions (and where applicable further sub-questions) for each theme are set out in Table 1. The evaluation methods and data that will be used to answer these questions are discussed in more detail in the following section.

Table 1: Process evaluation research questions

Research Question	Sub-questions
Design of the ATF	
1. Has the strategic prioritisation process of the ATF targeted the right mix of technologies and companies?	
2. How well do the strands of the ATF align and how well does the ATF align with or complement other government activities?	
Late stage R&D support: application process	

<p>3. Has the ATF attracted interest from organisations in priority technology areas? Why (not)?</p>	<p>Has the number of applications met expectations? If not, why?</p> <p>Has there been any under- or overspend with respect to the intended targets? If so, why?</p> <p>How successful has the ATF been at engaging the full range of strategic priority areas?</p> <p>Was there lots of interest from non-eligible sectors? If so, why?</p>
<p>4. Have application processes been seen to be fair, effective and proportionate? Why (not)?</p>	<p>Have decisions about which applications to fund been made using a clear, fair and effective process?</p>
<p>Late state R&D support: delivery and monitoring</p>	
<p>5. Are processes to support, monitor and track funded projects effective and proportionate?</p>	<p>How effective was the programme in communicating and working with external project participants?</p> <p>How well does delivery monitoring enable the team to respond to delivery or performance issues promptly and effectively?</p> <p>What improvements could be made to delivery monitoring and outcome monitoring?</p>
<p>Capital investment support: application process</p>	
<p>6. Has the ATF attracted interest from organisations in priority technology areas? Why (not)?</p>	<p>Has the number of applications met expectations? If not, why?</p> <p>Has there been any under- or overspend with respect to the intended targets? If so, why?</p> <p>How successful has the ATF been at engaging the full range of priority sectors and organisations?</p>
<p>7. Have application processes been seen to be fair, effective and proportionate? Why (not)?</p>	<p>Have decisions about which applications to fund been made using a clear, fair and effective process?</p> <p>Have applicants experienced a smooth process with no major surprises along the journey?</p> <p>Have project resources been sufficient and appropriately allocated to ensure a smooth process?</p>
<p>Capital investment support: delivery and monitoring</p>	
<p>8. Are processes to support, monitor and track funded projects expected to be effective and proportionate?</p>	<p>How effective is the programme expected to be in communicating and working with external project participants?</p>

	<p>How well is delivery monitoring expected to enable the team to respond to delivery or performance issues promptly and effectively?</p> <p>How well is outcome monitoring expected enable the team to understand if the programme is on track to deliver outcomes?</p> <p>To what extent is QA for the monitoring data expected to be sufficiently robust?</p> <p>What improvements could be made to delivery monitoring and outcome monitoring?</p>
Overall programme delivery	
9. How effective has the ATF been in engaging other programmes and stakeholders in order to achieve the intended outputs, outcomes and impacts?	How effective was the communication in engaging a diversity of external stakeholders?
10. How effective and efficient has the internal organisation of the ATF been?	<p>How effectively do the two strands of ATF funding work together?</p> <p>How well do the organisations involved with the ATF engage with one another?</p> <p>Were resources for administering each stage of the policy sufficient and suitably allocated?</p>
Synthesis	
11. How well do processes appear to support the delivery of intended outputs, outcomes and impacts of the ATF?	How effective have different parts of the ATF delivery process been?
12. What are the key lessons learned and recommendations for process-related changes in delivering the ATF?	

Source: Frontier Economics.

4.3 Evaluation methods

The previous section set out the process evaluation themes and questions. There are four main sources of data that will be used to answer these questions:

- Internal ATF monitoring data.
- Deliberative workshops (with ATF delivery partners, applicants to the ATF, and wider stakeholders).
- In-depth semi-structured interviews (with applicants for capital support).

- Pre-existing internal evaluations.

The section provides detail on each data source. An overview of which research questions each of the first three data sources is recommended for is provided in Table 2. (Data from existing internal evaluations will be examined with respect to all research questions.)

Table 2: Process evaluation research questions and data sources

Research question	Monitoring data	Delivery / industry workshop	R&D applicant workshops	Capital applicant interviews
Design of the ATF		✓	✓	✓
R&D support: application process	✓	✓	✓	
R&D support: delivery and monitoring		✓	✓	
Capital support: application process	✓	✓		✓
Capital support: delivery and monitoring		✓		✓
Overall programme delivery		✓	✓	✓
Synthesis	✓	✓	✓	✓

Source: Frontier Economics.

Monitoring data

Internal monitoring data will be used to support the process evaluation. Specifically:

- Data on the number of applications for the various competitions, and their spread across priority areas, will help to provide evidence on the breadth of the EV supply chain that has sought support through the ATF (Themes 2 and 4).
- Data on the amount of funding granted through the ATF to date as compared with the funds available, will provide evidence on whether spending has been in line with targets (Themes 2 and 4).
- Data on the distribution of time spent at each stage of the application process for capital support will be informative for understanding the extent to which the application process is effective and proportionate (Theme 4).

The analyses of these data are important to provide insights that can be picked up on in more detail in the workshops and in-depth interviews. These qualitative data will shed light on the reasons why these outcomes have occurred.

Workshops

Workshops are useful for collecting information from a group of stakeholders on their attitudes, perceptions and experiences in a way that allows participants to build and reflect on each other’s contributions. The workshop format allows areas of consensus to be identified

alongside areas where views differ and reasons for any differences. Workshops are also useful for exploring and testing areas of interest that were identified through the in-depth stakeholder interviews that were conducted as part of the framework design process.

The workshops are qualitative in nature, and so are useful for addressing open-ended questions and exploring issues that have arisen (for example, in previous internal reviews, or through the analysis of monitoring data) in more detail. This will include examining the hows, whys and consequences of issues.

Workshops will be led by experienced facilitators with a defined agenda covering aspects of the process evaluation relevant to each session. The sessions will vary in length and size according to the expected range of questions to be covered, with a mix of plenary and breakout discussions. Workshops will be held remotely using video-conferencing to facilitate wide participation free from geographic constraints. This also enables sessions to be recorded for later analysis of findings. Insights will be coded against the evaluation questions.

Three workshops will be conducted as part of the process evaluation:

- One workshop will be conducted with the organisations involved in delivering the ATF, including representatives from BEIS, APC, IUK and DIT. This workshop will explore the process evaluation themes identified above, in particular picking up on issues identified through previous in-depth interviews with these groups. Breakout sessions would be used to focus on themes 2 and 3 (relating to support for R&D) in parallel to themes 4 and 5 (relating to support for capital investments), with representatives allocated to different sessions as appropriate given their roles and interactions with different activities of the ATF. The facilitators will frame questions to focus on the processes and activities, rather than the impact of these activities. It is expected that the workshop will consist of around 12 participants, and last for around 3 hours.
- One workshop will be conducted with companies who have received funding to support R&D activities. This workshop would explore themes 2 and 3 in detail, but also touch on themes 1, 6 and 7. It is expected that the workshop will last around 90 minutes, with a breakout session to facilitate discussion. It would consist of around 12 participants, selected from the list of funded projects to reflect the range of R&D projects and sectors funded through the first four R&D competitions.
- One workshop will be conducted with companies who have not been successful in their application for R&D support. This workshop would explore theme 2 in detail, as well as touching on themes 1, 6 and 7. It is expected that the workshop will last around 90 minutes, with a breakout session to facilitate discussion. It would consist of around 12 participants, selected from the list of applicants to reflect the range of R&D projects and sectors that were not successful in their application for funding.

These workshops will focus on the process, rather than the impacts, of the ATF. However, challenges or successes in process can affect the impacts achieved, and stakeholders may have useful perspectives on these consequences. It is therefore important that any relevant

findings from the process evaluation are incorporated into the impact evaluation (see framework for impact evaluation in section 5).

In-depth interviews

The process evaluation will also include 6 in-depth interviews, three with those who have been successful in their application for capital funding and three with those who have not been successful for capital funding. These in-depth interviews will be semi-structured and aimed at exploring themes 4 and 5 in particular, but will also touch on themes 1, 6 and 7. The use of in-depth interviews for capital applicants (rather than workshops, as is the data collection method for R&D applicants) reflects the fact that capital applications are more commercially sensitive, and that the application process is longer, more involved and more varied for capital applicants.

Interviews will be led by experienced interviewers working to a topic guide informed by the process evaluation questions. We expect each interview to last up to one hour and to be conducted remotely (recorded for later analysis where permission is given). Insights will be coded against the evaluation questions.

Internal evaluations

The process evaluation will also include a desk review of pre-existing internal reviews relating to the processes around the design and implementation of the ATF. In particular this will include the Gate Review 4 conducted in 2022. The process evaluation will build on these previous reviews and where relevant, explore with stakeholders how processes have or could change in response to previous recommendations made or the themes raised (in particular as part of the workshop with delivery stakeholders). The desk review will therefore take place in advance of any workshop activity.

Synthesising the evidence

Framework analysis will be used to analyse the findings from all the qualitative research (the internal evaluations, the workshops and in-depth interviews) and combine this with the findings from the monitoring data. This involves the evaluators familiarising themselves with the evidence, identifying a framework or typology to organise emerging themes, indexing qualitative evidence according to the thematic framework, and interpreting the key features of the evidence in each theme to find associations and provide explanations for observed phenomena.

4.4 Timing

The process evaluation will be conducted between late 2022 and early 2023. Figure 13 illustrates how this sits relative to the timing of the ATF policy. By this stage, four competitions for R&D support will have been conducted, and all the studies funded through the first two competitions will have been completed. Projects funded through the second two competitions will either be underway or will have been completed. The competitions for capital support will have been running for over two years. However, only a handful of capital projects will have been approved and be underway by this time.

ATF Evaluation Framework

This timing means that the process evaluation can examine experiences of the full lifecycle of the policy for R&D support (from competition design through the award process to project monitoring and close out), but only the earlier stages for capital support (design and the award process). Any evaluation of the project monitoring processes for capital projects would have to be forward looking – in other words, based on expectations around the planned monitoring processes rather than experience of how these have worked in practice. While this is one limitation to the timing of the process evaluation, it is outweighed by the benefits of conducting the process analysis earlier in the lifecycle of the ATF. This enables any recommendations about the overall design or delivery of the ATF, or about any stage of the feasibility studies strand of the programme, to be applied in real time and directly benefit the ATF itself. Moreover, an evaluation of the later phases of the process of capital projects could be conducted alongside a subsequent impact evaluation.

Figure 13: Timing of the process evaluation



Source: Frontier Economics.

5. Impact evaluation framework

5.1 Introduction

Impact evaluation aims to assess what changes have occurred because of a policy, the scale of those changes and the extent to which they can be attributed to the intervention. In an impact evaluation, the evaluator tries to understand the additionality of the intervention by asking the question “What difference has the intervention made?”¹⁹

In line with the guidance in the HM Treasury *Magenta Book*, we recommend that the impact evaluation of the ATF should be theory-based. The complex landscape in which the ATF is being delivered means that it is not feasible to use experimental or quasi-experimental methods, which rely on being able to identify a comparator ‘control’ group who were not affected by the ATF.²⁰ Theory-based methods do not provide a precise estimate of the size of the impact of a policy – instead the aim is to explore whether the intervention contributed to the measured change in outcomes, and why the policy worked or did not work.

We recommend in particular that the impact evaluation be delivered using a **contribution analysis**. The *Magenta Book* explains the merits of this method:

“Contribution analysis argues that if one can verify or confirm a Theory of Change with empirical evidence – that is, verify that the steps and assumptions in the intervention Theory of Change were realised in practice, and account for other major influencing factors – then it is reasonable to assume that the intervention in question has made a difference.”²¹

Impact evaluation using this methodology would give an evidence-led assessment of whether the ATF had (or did not have) its intended impacts, and an understanding of why this was the case.

The first step of contribution analysis is developing a Theory of Change and a specific set of questions to be addressed through the evaluation.²² We describe the Theory of Change of the ATF in Section 3. On that basis we developed the following research questions:

1. Are targets for outputs and outcomes being met? If not, why not?
2. To what extent has the ATF met, or is it on track to meet, longer-term objectives?
3. To what extent has the ATF enabled wider economic or social benefits?
4. What are the main learning points from the ATF?

¹⁹ HM Treasury (2020), *Magenta Book: Central Government Guidance on Evaluation*.

²⁰ The core principle of experimental or quasi-experimental methods is that the outcome from the group that received an intervention can be compared to the outcome of a ‘control’ group, where that control group is effectively identical to the group of interest except for that they did not receive the intervention.

²¹ CECAN (2020), *Choosing Appropriate Evaluation Methods: A Tool for Assessment and Selection*, p38.

²² INTRAC (2017), *Contribution Analysis*, available here: <https://www.intrac.org/wpcms/wp-content/uploads/2017/01/Contribution-analysis.pdf>

Sitting underneath these high-level questions are specific indicators which are detailed in Table 3 below.

Building on the Theory of Change and the evaluation questions, we developed an impact evaluation framework which is described in this section. Section 5.2 sets out the evaluation methodology, Section 5.3 sets out the appropriate indicators and metrics suggested, while Section 5.5 focuses on data collection and timings.

5.2 Evaluation methodology

Understanding the additionality of the ATF is challenging: ideally evaluators would want to respond to the evaluation questions by comparing the observed post ATF world with a **counterfactual** - that is, what would have happened in the absence of the ATF intervention. Given the complexity of the environment in which the ATF operates, it is not realistic that an evaluation can identify a good counterfactual or 'control group' to support a precise quantification of the impact of the ATF on intended outcomes or impacts.

For example, evaluators could try to identify similar countries or regions, that have not been impacted by any similar reform, that could act as a counterfactual. However, all of the countries that could be considered similar to the UK (in terms of proximity and existing levels of automotive sector activity) have received some level of support to develop the EV supply chain and the EV market, which would limit their usefulness as a counterfactual (notwithstanding differences in institutional and industrial characteristics of different countries, which limit the extent to which they can be used as a counterfactual to the UK case). Similarly, evaluators could consider sectoral counterfactuals, but this is challenging in terms of finding sectors comparable to automotive that act as a reasonable proxy for how the industry would evolve in the absence of intervention.

Another approach, focusing more on individual organisations rather than country-level or sectoral outcomes, would be comparing the outcomes of companies that have received funding from the programme to similar companies that have not. However, this comparison is not suitable to identify the additionality of the ATF, given that the ATF is intended to impact the whole industry and also affect the investment decisions of companies that do not receive funding themselves. Companies may also 'select into' support from the ATF for reasons that cannot be controlled for, meaning that the group of firms not directly supported are not a reasonable counterfactual for how supported firms would have performed in the absence of funding.

These features underpin our recommendation to adopt a **theory-based approach** to the evaluation. This involves attempting to test the theoretical links between the ATF activities and intended impacts identified in the logic model by gathering, assembling and triangulating across a range of data sources:

- **Quantitative analysis of secondary data**, with modelling and estimation of attributable impacts where feasible. Internal monitoring data, project KPIs and secondary data from external sources (such as IHS Markit, SMMT, ONS and other data sources available)

will be analysed to understand market trends and understand how observed metrics have changed over time and compare with initial targets (where applicable).

- **Qualitative analysis of primary data collected through in-depth interviews, workshops and surveys.** The primary data collection is focused on exploring the extent to which observed market trends and outcomes are attributable to the ATF, and on collecting qualitative data on aspects such as confidence or perceptions that are not readily available in secondary data sources.

5.3 Evaluation indicators and metrics

As mentioned in section 5.1, the proposed evaluation framework is structured around four research questions:

1. Are targets for outputs and outcomes being met? Why (not)?
2. To what extent has ATF met, or is it on track to meet, longer-term objectives?
3. To what extent has the ATF enabled wider economic or social benefits?
4. What are the main learning points from the ATF?

Each of the evaluation questions presented above will be assessed using a set of indicators. The indicators suggested are presented in Table 3 below. Each indicator has been paired with a range of metrics that will help the evaluator extract findings.

In answering the research questions under phase 1, the metrics identified will be compared with business case targets and capital project key performance indicators. In answering the research questions under phases 2 and 3, the metrics identified will document the key trends, and the qualitative assessment of stakeholders will be crucial in seeking to understand the additionality of the ATF in those trends. Furthermore, qualitative data that provide insight into how and why the ATF achieved or did not achieve the expected outcomes, and which aspects of the ATF were more or less impactful, will be sought.

Table 3: Indicators and metrics assigned to research questions

Indicators	Metrics
1. Are targets for outputs and outcomes being met? If not, why not?	
Has late-stage R&D been supported as expected?	Number of feasibility studies supported Private investment secured (to be compared with business case targets)
Were the outcomes of late-stage R&D support as expected?	Number of R&D studies that result in capital application Perceptions of stakeholders

Has capital investment been supported as expected?	Number of approved capital investment projects completed Private investment secured (to be compared with business case targets)
Were the short-term outcomes of capital investment support as expected?	Number of gigafactories produced, number of battery units produced, annual production capacity Commercial links by approved capital projects after completion Employment by approved capital projects after completion (to be compared with project KPIs)
2. To what extent has the ATF met, or is it on track to meet, longer-term objectives?	
Has confidence in the UK EV supply chain increased?	Forecast production of electric vehicles (pre and post announcement of ATF) Qualitative assessment of stakeholders
Has the EV sector grown in line with expectations?	Amount of private investment in the automotive and related sectors EV production Value of turnover/number of companies in the automotive and related sectors Qualitative assessment of stakeholders
Have jobs in the automotive sector been created or safeguarded?	Number of automotive jobs, direct and indirect Qualitative assessment of stakeholders
Is a secure and resilient local supply of key materials and components available to UK based OEMs?	Share of local content built in UK vehicles Imports of EV components Qualitative assessment of stakeholders
3. To what extent has the ATF enabled wider economic or social benefits?	
Are there demonstrable local or regional benefits to ATF realised or expected?	Number of automotive jobs by region, direct and indirect Investment in the automotive and related sectors by region Qualitative assessment of stakeholders
Are environmental benefits being realised?	Emissions impacts from increased EV production Qualitative assessment of stakeholders
Is the ATF maintaining the trade flows associated with the automotive sector?	Exports of electric vehicles (number/value) Exports of EV components

	Qualitative assessment of stakeholders
Has the ATF investment represented value for money?	Synthesis of wider evaluation evidence
4. What are the main learning points from the ATF?	
Have there been any unexpected outcomes or impacts of ATF (whether positive or negative) and what is their nature / scale?	Qualitative assessment of stakeholders
What have the main barriers and enablers of success for the ATF been?	Qualitative assessment of stakeholders
Has the ATF complemented other policies and interventions seeking to promote similar outcomes and impacts effectively?	Qualitative assessment of stakeholders
What lessons are there for future interventions?	Qualitative assessment of stakeholders

For some of the metrics, we refer to the automotive sector as a whole, rather than the EV supply chain. This is because most of the secondary data sources available do not allow the differentiation of EV supply chain metrics from those of the entire automotive industry. Similarly, it is possible to identify metrics for the battery industry however it is not possible to look at the section of the battery industry that serves exclusively the automotive industry. This secondary quantitative data however can still be used to evidence key macro trends. Our framework sets out the way this data will have to be complemented with qualitative data from workshops, surveys and case studies to understand the attribution to the ATF.

5.4 Data collection and timings

A theory-based approach allows evaluators to test the programme logic identified in the Theory of Change with a range of evidence, structured by the research questions. Even in a theory-based approach however it is important to identify a “pre-intervention” baseline, to understand how different quantitative and qualitative indicators have evolved over time.

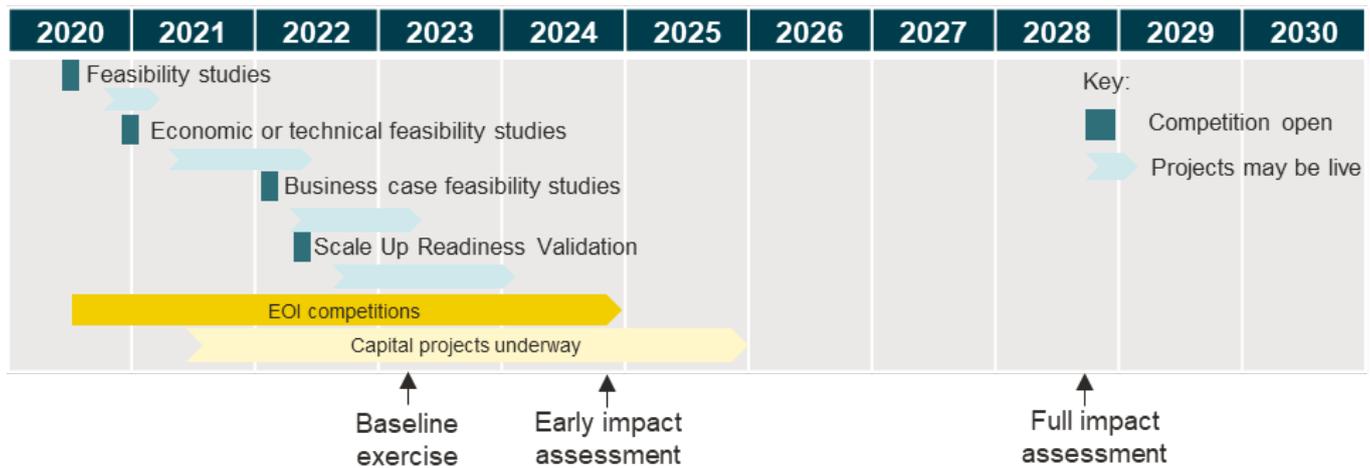
For this reason, we recommend that the impact evaluation starts with a **baseline exercise**. This should be conducted as soon as possible, ideally in early 2023. This should collect qualitative data on as close to a “pre-ATF” baseline as is now possible, so that this can be compared with data in the later evaluation. This baseline exercise should also review the secondary data available in more detail and ensure that appropriate monitoring data are being collected and archived by ATF delivery partners.

Given the nature of the ATF, we anticipate that the range of outputs and impacts of the intervention will have different timings (as illustrated in Figure 11). For this reason, we propose a multi-stage approach to the impact evaluation that would be structured in the following way:

- **Early impact assessment**, to be conducted in the second half of 2024 (to conclude before March 2025, the end of the current ATF funding). Based on the timings identified in the Theory of Change, we anticipate that the focus of the early impact assessment would be on delivery of outputs and short-term outcomes as leading indicators of longer-term benefits. Conducting an early assessment while the ATF is still ‘live’ will maximise access to delivery stakeholders and internal data to support an early assessment. In this phase, further qualitative data would be collected and analysed alongside analysis of secondary data sources.
- **Final impact assessment**, to be conducted in 2028. This phase will be focused on the longer-term impacts of the ATF, drawing primarily on secondary data sources and stakeholder engagement.

More detail about each phase, including the research questions that would be examined and the suggested data collection, is provided in the following subsections. Figure 14 below summarises the timeline for the impact evaluation, with respect to the overall ATF timeline.

Figure 14: Timing of the impact evaluation



Baseline exercise

The main objective of the baseline exercise is to ensure that suitable data are available so that evaluators are able, in future, to analyse how the main metrics of interest have changed over time. We recommend four components to this exercise:

- An **in-depth interview with APC** to explore in detail the ‘data’ they hold internally on company attitudes to investing the UK, and how these are changing over time, and discuss how this could be preserved going forwards for the purposes of future evaluation.
- **In-depth interviews with APC and DIT** to preserve their assessment of company and investor attitudes to investing in the UK EV supply chain, which is as close to a ‘pre-ATF’ assessment as is possible.

- A **survey** of applicants for R&D or capital support (and/or other relevant companies identified by the APC or evaluation team). This survey would use contact with the ATF as a means of identifying companies relevant for the EV supply chain and would ask quantitative and qualitative questions about their assessment of the UK supply chain, strengths and weakness, expectations of supply and demand, and the impacts of the ATF. Such data on perceptions is not currently available from secondary data sources and would validate the overall impression obtained from the in-depth interviews with APC and DIT.
- A **detailed review of the secondary data sources** that are suggested for quantifying the metrics under each evaluation question. This will ensure that there are no other evidence gaps that the primary data collection exercises could help fill and will archive a baseline metric for data that may not be easily accessible in future. In particular, it will be important to ensure any data obtained or collated before the introduction of the ATF as part of the business case development (such as vehicle production forecasts) are archived for future evaluators. The possible data sources are set out in Table 4. Where these data are not able to isolate the electric vehicle supply chain specifically (for example, because Office for National Statistics Standard Industry Classification codes do not have EV specific categories), the relevant metrics will need to be evaluated using data on either the automotive sector as a whole, or other industrial groups (such as manufacture of batteries) that incorporate the EV supply chain but also serve other industries.

How all these data would then be used in the impact evaluation is described in the following sections.

Table 4: Possible secondary data sources for proposed metrics

Metric	Possible secondary data source(s)
Number of feasibility studies supported	Internal monitoring
Private investment secured in R&D studies	Project KPI
Number of R&D studies that result in capital application	Internal monitoring
Number of approved capital investment projects completed	Internal monitoring
Private investment secured in capital projects	Project KPI
Number of gigafactories produced, annual production capacity and levels	Project KPI
Commercial links by approved capital projects after completion	Project KPI
Employment in approved capital projects after completion	Project KPI

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Forecast production of electric vehicles	IHS Markit, Bloomberg intelligence, rho motion
Amount of private investment in automotive and related sectors	Pitchbook, Crunchbase, Bloomberg intelligence, Drakestar, SMMT
Number of electric vehicles manufactured	IHS Markit, Bloomberg intelligence, SMMT, rho motion
Value of turnover/number of companies in the automotive and related sectors	ONS UK business; activity, size and location, Bloomberg intelligence
Number of automotive jobs, direct and indirect	Annual Survey of Hours Earnings, Labour Force Survey
Share of local content built in UK vehicles	OECD Trade in Value Added
Imports of EV components (including batteries)	UN Comtrade, rho motion, IHS Markit, Bloomberg intelligence
Number of automotive jobs by region, direct and indirect	Annual Survey of Hours Earnings
Investment in automotive and related sectors by region	Pitchbook, Crunchbase, SMMT
Emissions impacts from increased EV production	International Energy Agency
Exports of electric vehicles (number/value)	SMMT, Bloomberg intelligence
Exports of EV components	UN Comtrade

Source: Frontier Economics.

Early impact assessment

An early impact assessment should take place before the end of ATF funding (March 2025), to make sure that BEIS and the evaluators have access the widest range of stakeholders to maximise learnings. The objective of the early impact assessment would be to answer all four of the research questions set out above, accepting that many of the longer-term impacts of the ATF may not yet have come to fruition.

We recommend that in the early impact assessment the evaluators:

- analyse secondary data to examine the metrics set out above that are indicative of the outputs and outcomes of the ATF, looking at changes from baseline data where available and comparing the targets set out in the Business Case with the realised outcomes; and
- perform further primary data collection to obtain data on metrics not available from secondary sources and to explore the additionality of the ATF in the outcomes observed.

We recommend that the following primary data collection takes place to inform the early impact assessment:

- **In-depth interviews** with APC and DIT. These would seek to understand how APC and DIT perceive company and investor attitudes to have changed since the baseline, and the extent to which this is felt to be due to the ATF.
- **Workshops** with ATF applicants, OEMs, the wider supply chain, ATF delivery partners (APC, DIT, BEIS and IUK) and wider stakeholders. These workshops would seek to understand whether objectives have been met, gather views on additionality, and gather information on the way impacts were generated. In particular, the relative importance and effectiveness of the capital support, R&D support, and communication activities would be examined, as would unexpected outcomes, barriers and enablers of success and lessons for future interventions.
- **Survey** of applicants for R&D or capital support (and other relevant companies identified by the APC or evaluation team). As for the baseline survey, this survey would use contact with the ATF as a means of identifying companies relevant for the EV supply chain, excluding those companies that have opted out of recontact during the baseline phase. It would collect an update on companies' assessments of the UK supply chain, strengths and weakness, expectations of supply and demand, and the impacts of the ATF.
- **Case studies.** The original Business Case anticipated the potential realisation of over 20 capital investments. Two or three of these capital investment projects could be explored in detail to understand the outcomes that could be attributed to those particular investments (and, if those investments would not have happened without the ATF, to the ATF). We expect at least one Gigafactory to be an important case study. These case studies can be explored in the workshops and in-depth interviews described above but should also be supplemented with a desk review of relevant material and in-depth interviews with the companies involved and related stakeholders. A preliminary assessment of realised and expected future benefits for each case study should be carried out, which would be re-visited and updated in the final impact assessment.

Table 5 below shows how the suggested data collection and data analysis map to each research question in the early impact assessment phase.

Table 5: Early impact assessment: research questions and data

Research Questions	Early impact assessment
Are targets for outputs and outcomes being met? If not, why not?	Analysis of secondary data: Internal monitoring and Project KPIs
To what extent has ATF met, or is it on track to meet, longer-term objectives?	Primary Data Collection: in-depth interview with APC/DIT

	<p>Primary Data Collection: survey of industry/applicants to ATF</p> <p>Primary Data Collection: industry workshops</p> <p>Primary Data Collection: case studies</p> <p>Analysis of secondary data (see Table 4)</p>
To what extent has the ATF enabled wider economic or social benefits?	Analysis of secondary data (see Table 4)
What are the main learning points from the ATF?	<p>Primary Data Collection: in-depth interview with APC/DIT</p> <p>Primary Data Collection: industry workshops</p> <p>Primary Data Collection: case studies</p>

Final impact assessment

A final impact assessment should take place at least three years after the closing of the programme (mid-2028), to make sure the evaluation captures some of the anticipated longer term impacts. Based on the impact timescales set out in section 3, 2028 is a reasonable time to expect longer-term benefits to have been realised while also allowing those involved in the ATF to recall or consider how ATF has contributed to outcomes and impacts meaningfully.

We recommend that in the final impact assessment the evaluators:

- analyse secondary data to gain insights on long-run impacts of the ATF;
- complement the secondary data analysis with qualitative primary data collection of final reflections on additionality and wider learnings.

This primary data collection should be more light touch than for the early impact assessment, and we recommend structuring in the following way:

- **Workshops** with stakeholders (including ATF applicants, OEMs, the wider supply chain, APC, DIT and BEIS) to discuss the additionality of the ATF over the long term, and draw final reflections on context and wider learnings.
- The **case studies** that were examined in the early impact assessment should be revisited to examine the long-term impacts of these capital investments. These impacts could be explored through the workshops but we would also recommend in-depth interviews with the companies involved and related stakeholders.

We do not recommend a third survey in this phase, as the engagement of past ATF applicants (those who once sought R&D support in particular) may be low. The longer term impacts of the

ATF, which are the focus of the final impact assessment, can be examined through the analysis of secondary data (to identify the overall status of the EV supply chain) and the workshops/case studies (to understand the additionality of the ATF and how/why the policy did or did not have the impacts intended)).

Table 6 below summarises how the suggested data collection and data analysis map to each research question in the final impact assessment phase.

Table 5: Final impact assessment: research questions and data

Research Questions	Final impact assessment
<p>Are targets for outputs and outcomes being met? If not, why not?</p>	<p>Analysis of secondary data: Project KPIs</p>
<p>To what extent has ATF met, or is it on track to meet, longer-term objectives?</p>	<p>Primary Data Collection: industry workshops</p> <p>Primary Data Collection: case studies</p> <p>Analysis of secondary data (see Table 4)</p>
<p>To what extent has the ATF enabled wider economic or social benefits?</p>	<p>Analysis of secondary data (see Table 4)</p>
<p>What are the main learning points from the ATF?</p>	<p>Primary Data Collection: industry workshops</p> <p>Primary Data Collection: case studies</p>

Value for Money

One of the suggested indicators under ‘To what extent has the ATF enabled wider economic or social benefits?’ is ‘Has the ATF investment represented value for money?’ A Value for Money (VfM) assessment is an important part of an holistic evaluation exercise, as recognised in the *Magenta Book*:

“While impact [evaluation] demonstrates and quantifies outcomes, it cannot on its own assess whether those outcomes are justified. Value-for-money evaluation considers such issues, including whether the benefits of the policy are outweighed by the costs, and whether the intervention remains the most effective use of resources.” (p.15)

We suggest that a VfM assessment is conducted as part of the final impact evaluation, recognising that economic and social benefits of the ATF are likely to take time to materialise.

There is an inherent difficulty in theory-based evaluations in attributing quantified contributions of an intervention to outcomes and impacts. The aim of the VfM assessment is therefore not to precisely estimate an overall quantified and monetised Cost-Benefit ratio for the ATF. Rather, the evaluators will need to use the evaluation evidence to make a compelling case as to whether (or not) the economic and social benefits of the ATF are likely to outweigh the public costs of delivery. While the precise approach would need to be determined based on the evidence that is ultimately available, we suggest the VfM assessment should consist of the following broad steps.

- Assemble data on public costs. This should include only public sector investments, broken down by year of investment. We anticipate that BEIS monitoring data will provide this information.
- Identify credible ‘benefit pathways’ which can feasibly be monetised in economic (GVA) terms to provide quantified and monetised measures of impact. Based on the evaluation framework and suggested measures of success, we anticipate this could include:
 - High-productivity jobs generated and safeguarded by ATF support. Per the Green Book, not all of the economic activity related to jobs can be captured in a VfM assessment. In the absence of the ATF, people would be expected to find employment elsewhere. Therefore it is important to demonstrate that the jobs supported by ATF are higher productivity than would otherwise be the case. Measures of GVA per worker in relevant automotive sectors can be obtained from ONS statistics and compared with regional or national average benchmarks as one way to proxy this impact, though more specific data on wages or skills of jobs can also be obtained from the evaluation evidence and case studies to provide further validation of this channel.
 - Additional exports enabled by ATF support. If measures of exports (turnover) are available, ONS data on sectoral turnover and GVA can be used to construct multipliers allowing turnover benefits to be converted to GVA terms.
 - Carbon savings attributable to ATF support. BEIS-published values of carbon can be used to generate an economic value of this social benefit. Additionality in terms of global carbon needs to be carefully considered in this pathway.
- Assemble best estimates of the annual profile of these monetised benefits attributable to ATF by year (realised and expected) based on the evaluation evidence. Sensitivities based on the evidence should be considered to give credible ranges.
- Discount costs and benefits to present value terms based on Green Book methodology to provide a monetised assessment the VfM of the ATF. Where quantification of the scale of the additionality of the ATF to measured benefits is not viable, the evaluators should consider what scale of additionality would be required for the monetised benefits to exceed costs and set out a narrative assessment of the validity of these assumptions given the evaluation evidence available.
- Use the wider evaluation evidence on benefits which are hard to quantify and/or monetise to provide additional narrative evidence on the likely VfM of the ATF. This can

include: the extent to which additional investments have been leveraged which may generate additional economic benefits beyond the impact on high-wage employment; regional and local benefits which support levelling up or equalities objectives; additional R&D which supports and sustains the UK's attractiveness as a location for innovation; wider spillover benefits; wider societal benefits beyond carbon savings.

5.5 Reporting

The impact evaluation should be carried out with the objective of providing stakeholders with a clearly presented set of analysis of evidence against each of the evaluation questions. This should be drawn together to set out the extent to which the objectives of the ATF have been met or are on track to be met, why this is the case, and what can be learned for future policies.

Best practice would suggest that the analysis and reporting of the evaluation should cover:

- **Overall headline findings.** Overall findings are valuable for summarising and conveying key messages.
- **Descriptive statistics.** It is helpful to begin the analysis with a set of descriptive information which sets the context for the evaluation. This might include, for example, tracking trends in particular metrics over time so that the reader understands trends before the ATF and how these may have changed in the lead up to, during and since the investment was implemented. These contextual analyses will be a very helpful way for the evaluation audience to understand the challenges being addressed by the ATF and, what may have happened as a result of the policy.
- **Interpretation of results.** A clear narrative should accompany the results. Importantly, this should outline how additionality is isolated – in other words, it is important to try to unpick which of the outcomes are additional and arise as a result of the ATF, as opposed to those that would have happened anyway without the ATF.
- **Qualitative context.** The quantitative methods should be triangulated with qualitative analysis, using themes from the workshops and survey responses, to present a holistic picture of the impact of the ATF.
- **Uncertainties and limitations.** There will be some aspects of the evaluation that are subject to uncertainty or have known limitations. These should be discussed explicitly where relevant.

Appendix A Developing the evaluation framework

The evaluation framework was developed and validated through three broad activities: a desk review of relevant documents, in-depth interviews with stakeholders, and a validation workshop.

Desk review of evidence

We reviewed a range of ATF documentation in order to understand the aims and objectives of the policy, the pathways to intended impact, and the process involved. This included business cases, process documents, Gate reviews, websites, blogs, presentations, and wider reports on the EV ecosystem and other issues of relevance to the ATF. The main documents reviewed are set out in Table 7.

Table 6: List of documents covered in the evidence review

BEIS	Full Business Case for Automotive Transformation Fund (March 2020)
BEIS	Full Business Case for Automotive Transformation Fund – Supply Chain (September 2021)
APC	ATF Programme Delivery – Overview of Processes (April 2022)
BEIS	Automotive Transformation Fund: Prioritisation of Funds (February 2022)
BEIS	Automotive Transformation Fund: Engagement with key prospects (April 2022)
BEIS	OGC Gateway Review 0/4: Strategic Assessment/Readiness for Service (August 2020)
BEIS	OGC Gateway Review 4: Readiness for service (June 2022)
GIAA	Automotive Transformation Fund/ 'Gigafactory' Final internal audit report (August 2021)
BEIS	Lessons Learned report for the Automotive Transformation Fund (October 2021)
APC	Automotive Transformation Fund Feasibility Study Round 1 Impact Report (January 2022)
APC	ATF Programme Delivery Board slide deck (January 2022)

In-depth interviews

In-depth interviews are particularly useful in eliciting a large amount of qualitative information from each individual. We conducted seven online in-depth interviews with representatives from the following:

- BEIS Automotive and sector Analysis teams
- BEIS Central Grants and Loans team
- Innovate UK

ATF Evaluation Framework

- Advanced Propulsion Centre (2 interviews)
- Faraday Battery challenge
- Automotive Council

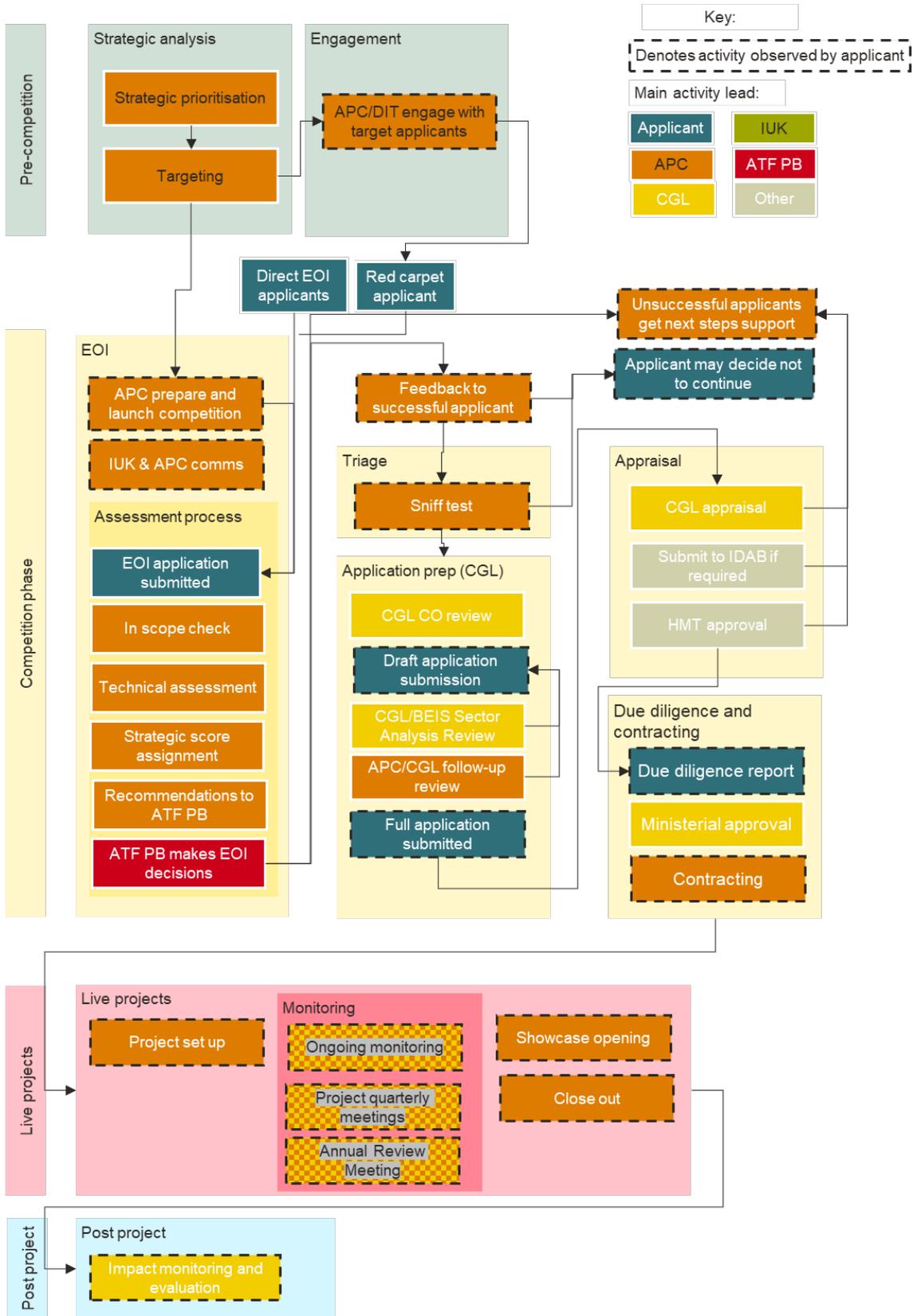
The interviews were semi-structured, following a 'skeleton' topic guide that set out the topic areas to be covered. The questions were tailored to suit the specific individual or individuals being interviewed, and therefore gather the most relevant information. The semi-structured nature of the interviews enabled us to delve into the key areas of interest, but also for any unexpected topics or points of interest to be explored.

Validation workshop

A validation workshop was held at which the developed Theory of Change (and logic model) were discussed, and the high level evaluation strategy and research questions presented. This ensured that there was consensus among all stakeholders that the important aspects of the logic of the ATF had been captured, and therefore that it was appropriate to base an evaluation strategy on this understanding. The validation workshop included representatives from BEIS, APC, IUK and DIT.

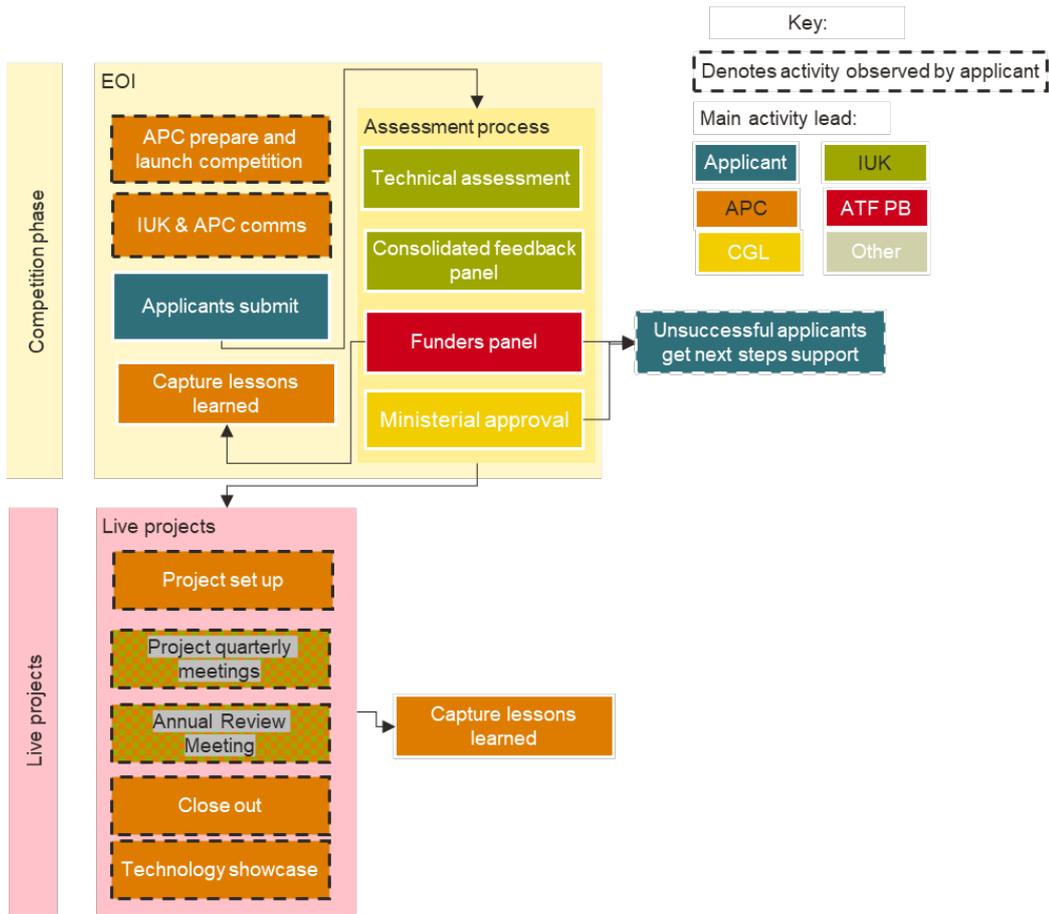
Appendix B Detailed ATF process map

Figure 15: ATF process map: capital investment support



Source: Frontier Economics.

Figure 16: ATF process map: R&D support



Source: Frontier Economics.

Appendix C Framework of impact evaluation data sources

The tables below show, for each research question (RQ) and metric, whether which data sources would be examined, and in which phase of the impact evaluation.

Indicators	Metrics	Data sources	In early impact assessment	In final impact assessment
Has late stage R&D been supported as expected?	Number of feasibility studies supported	Internal monitoring	Yes	No
	Private investment secured	Project KPI	Yes	No
Were the outcomes of late stage R&D support as expected?	Number of R&D studies that result in capital application	Internal monitoring	Yes	No
	Increase in potential investments for which UK on the short list of locations			
Has capital investment been supported as expected?	Number of approved capital investment projects completed	Internal monitoring	Yes	No
	Private investment secured	Project KPI	Yes	Yes
Were the short term outcomes of capital investment support as expected?	Number of gigafactories produced, annual production capacity and levels	Project KPI	Yes	Yes
	Commercial links by approved capital projects after completion	Project KPI	Yes	Yes
	Employment by approved capital projects after completion	Project KPI	Yes	Yes

Source: Frontier Economics.

ATF Evaluation Framework

Indicators	Metrics	Data sources	In early impact assessment	In final impact assessment
Has confidence in the UK EV supply chain increased?	Forecast production of electric vehicles	IHS Markit, Bloomberg intelligence, rho motion	Yes	Yes
	Perceptions of investors	Primary data collection	Yes	Yes
Has private investment in the EV supply chain increased as expected?	Qualitative assessment of stakeholders	Primary data collection	Yes	Yes
	Amount of private investment in in automotive and related sectors	Pitchbook/Crunchbase, Bloomberg intelligence, Drakestar, SMMT	Yes	Yes
Has the EV sector grown in line with expectations?	Number of electric vehicles manufactured	IHS Markit, Bloomberg intelligence, SMMT, rho motion Bloomberg Intelligence	Yes	Yes
	Value of turnover/number of companies in the sector		Yes	Yes
Have jobs in the automotive sector been created or safeguarded?	Number of automotive jobs, direct and indirect	Annual Survey of Hours Earnings, Labour Force Survey	Yes	Yes
Is a secure and resilient local supply of key materials and components available to UK based OEMs?	Share of local content built in UK vehicles	OECD TIVA	Yes	Yes
	Imports of EV components and batteries	UN Comtrade, rho motion, IHS markit, Bloomberg intelligence Primary data collection	Yes	Yes
	Qualitative assessment of stakeholders		Yes	Yes

ATF Evaluation Framework

Source: Frontier Economics.

Indicators	Metrics	Data sources	In early impact assessment	In final impact assessment
Are there demonstrable local or regional benefits to ATF realised or expected?	Number of automotive jobs by region, direct and indirect Investment in EV supply chain/automotive industry by region	Annual Survey of Hours Earnings Pitchbook, Crunchbase, SMMT	Yes	Yes
Are environmental benefits being realised?	Emissions impacts from increased EV production	IEA	Yes	Yes
Is the ATF maintaining the trade flows associated with the automotive sector?	Exports of electric vehicles (number/value) Exports of EV components and batteries	SMMT, Bloomberg intelligence UN Comtrade	Yes Yes	Yes Yes
Has the ATF investment represented value for money?	Synthesis of full range of impact evaluation data	ONS Annual Business Survey	No	Yes

Source: Frontier Economics.

Table 10: Metrics and data sources to answer RQ 4: “What are the main learning points from the ATF?”

Indicators	Metrics	Data sources	In early impact assessment	In final impact assessment
Have there been any unexpected outcomes or impacts of ATF (whether positive or negative) and what is their nature / scale?	Qualitative assessment of stakeholders	Primary data collection	Yes	No
What have the main barriers to and enablers of the ATF been?	Qualitative assessment of stakeholders	Primary data collection	Yes	No
Has ATF complemented other policies and interventions seeking to promote similar outcomes and impacts effectively?	Qualitative assessment of stakeholders	Primary data collection	Yes	No
What lessons are there for future interventions?	Qualitative assessment of stakeholders	Primary data collection	Yes	No

Source: Frontier Economics.

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