# SMB/8365/R

STRATEGIC BUSINESS PLAN (SBP)

| IEC/COMMITTEE: | SECRETARIAT: | DATE: |
|---|---|---|
| **TC 21** | **France** | **2025-01** |

Please ensure this form is annexed to the Report to the Standardization Management Board if it has been prepared during a meeting or sent to the IEC Secretariat promptly after its contents have been agreed by the committee.

## A. STATE TITLE AND SCOPE OF COMMITTEE

Technical Committee for Secondary Cells and Batteries

To provide standards for all types of secondary i.e. rechargeable cells and batteries as related to their chemistry, product dimensions, marking and performances, the intrinsic safety of the design, the qualification tests for selected applications and the safety rules for installation, operation, maintenance and disposal.

The main areas of application of such batteries are:

- Automotive for SLI (starting, lightning, ignition) and Start/Stop duty in cars, trucks, motorcycles and similar equipment
- Industrial for traction power supply to forklift trucks and similar vehicles
- Industrial for emergency power supply duty to telecom and data networks as also for emergency lighting and power backup for vital civil, industrial and military infrastructure
- Propulsion power supply to personal transport means such as Electrical Vehicles (EV), hybrid vehicles, golf carts, electric bikes and similar.
- Portable power supply to handheld equipment and devices
- Propulsion, backup power supply and engine starting to railways, ships, aircraft and similar
- Storage of energy from renewable sources both in islanded and grid-connected installations (Battery Energy Storage Systems or BESS)

In case of large grid integrated electrical storage systems (EES) covered by TC 120, the scope of TC 21 ends at the interface between the electrical energy storage device (the battery or electrochemical accumulation subsystem) and the rest of the Energy storage system.

All commercially maturing or matured electrochemical energy storage technologies and batteries made thereof, such as Lead-acid, Nickel-Cadmium, Nickel-Metal hydride, Lithium-ion, Sodium-ion as well as specialized ones such as Na-S (Sodium-Sulphur), Na-NiCl (Sodium-nickel chloride) High temperature couples and assorted Flow-Batteries are included in the scope of the technical committee and subcommittee.

Using the IEC Mapping platform, a map of published TC 21 and SC 21A standards has been developed and is accessible from the dashboards of either committee. It also shows battery standards maintained by other Technical Committees than TC 21

## B. MANAGEMENT STRUCTURE OF THE COMMITTEE

The work of the committee is shared between TC 21 and SC 21A as follows.

TC 21 develops and maintains standards regarding intrinsic product safety and specifications such as dimensions, markings, performance for Lead acid as also for Flow- and High-temperature batteries

TC 21 also manages the safety standards for the installation, operation, maintenance and disposal of all secondary batteries in application-specific installations.

SC 21A develops and maintains standards regarding intrinsic product safety and specifications such as dimensions, markings, performance for Ni-based, ~~and~~ Lithium-based, and Sodium-ion based secondary cells and batteries.

SC 21A develops and maintains also standards for aircraft batteries.

TC 21 (see Table 1) and SC 21A (see Table 2) have reviewed their management structure following the plenary meeting held in 2018 in Busan/Korea. The key change consisted in a concentration of the activities on Safety Standards on Battery installations in WG8 of TC 21. For more details refer to Table 3.

**Table 1 – TC 21 "Secondary cells and batteries"**

| Structure of TC 21 as per 2024-09 | | | |
|---|---|---|---|
| **Chair** | T. Dittrich | | |
| **Secretary** | Y. Boudou | | |
| **Coordination team** | TC21 & SC21A Chairs and Secretaries | | |
| **Advisory group** | TC21 & SC21A Chairs and Secretaries, convenors and team leaders | | |
| | **Working group** | **Convenor** | **Scope** |
| | WG 2 | J.P. Douady | Starter and Auxiliary batteries |
| | WG 3 | | Traction and stationary batteries |
| | WG 8 | W. Schulz | Safe operation of batteries |
| | WG 11 | T. Tamakoshi | Secondary high temperature cells and batteries |
| | PT 63330 | K. Yamada | Requirements for reuse of secondary batteries |
| | MT 6 | (S. Sugiura) | Maintenance of IEC 61056 - General purpose batteries |
| | MT 62902 | T. Dittrich | Maintenance of IEC 62902 – Marking symbols for identification of their chemistry |
| | JWG 7 | N. Shiga | Flow Battery systems for stationary applications<br>Linked to TC105 |
| | JWG 82 | | Secondary cells and batteries for renewable energy storage – Linked to TC82 |
| | JWG 69 Li | A. Ohma | Lithium batteries for automobile/automotive applications – Linked to SC21A & TC69 |
| | JWG 69 Pb-Ni | M. Tsushima | Lead acid and Nickel-based batteries for automobile/automotive applications – Linked to SC21A & TC69 |
| | JWG 12 | (T. Dittrich) | Harmonization of terms and definitions for secondary batteries and their applications |

**Table 2 – SC 21A "Secondary cells and batteries containing alkaline or other non-acid electrolytes"**

| Structure of SC21A as per 2024-09 | | | |
|---|---|---|---|
| **Chair** | J. Jeevarajan | | |
| **Secretary** | J.M. Bodet – Pierre Prenleloup | | |
| **Coordination team** | TC21 & SC21A Chairs and Secretaries | | |
| **Advisory group** | TC21 & SC21A Chairs and Secretaries, convenors and team leaders | | |
| | **Working group** | **Convenor** | **Scope** |
| | WG 1 | P. Prenleloup | Secondary alkaline cells and batteries for industrial applications |
| | WG 2 | H.Teraoka | Secondary alkaline cells and batteries for portable applications |
| | WG 3 | K. Kawakami | Secondary lithium cells and batteries for portable applications |
| | WG 4 | SW. Eom | Safety of secondary cells and batteries for portable applications |

| | | |
|---|---|---|
| WG 5 | J. Leber | Secondary lithium and sodium-ion cells and batteries for industrial applications |
| WG 6 | H. Teraoka | Environmental issues related to secondary cells and batteries containing alkaline or other non-acid electrolytes |
| WG 7 | A. Tellier | Aircraft batteries |
| PT 63338 | H.Teraoka | General guidance for reuse of secondary cells and batteries |
| MT 8 | T. Dittrich | Guide to designation of current in alkaline secondary cell and battery standards |
| JMT 18 | T. Dittrich | Safety of primary and secondary lithium batteries during transport – Managed by TC35 |
| | | Placeholder<br>LMT |
| | | Placeholder<br>MSS |

**Table 3 – Coordination team of TC 21 and SC 21A**

| | | |
|---|---|---|
| **Members** | Chairs and secretaries of TC 21 | |
| | Chairs and secretaries of SC 21A | |
| **Goals** | Assign new and existing standards to the right committee /sub-committee /working groups /project teams | |
| | Ensure consistency of the TC 21 and SC 21A organization, method of work and portfolio of standards | |
| | Make sure that expertise for a specific application is gathered in one WG only. | |
| **NWIP process** | The initiating NC sends the NWIP to one of the secretaries | |
| | The TC 21 and SC21A coordination team will review and discuss the initiative | |
| | The group will discuss and decide in cooperation with the initiator: | |
| | | into which committee and WG the new standard will be integrated |
| | | title and scope |
| | | if possible, the integration into an existing series of standards |
| | The NC will receive written feedback and then prepare and send the revised NWIP to the responsible secretary of either TC 21 or SC 21A The purpose of this review is solely to avoid overlapping and duplications with existing activities and standards. | |
| NOTE see documents 21/964A/Q and 21A/664A/Q | | |

## C. Business Environment

The key areas of **TC21** standardization activities relate to:

**• Batteries for automotive SLI (Starting - Lightning - Ignition) and Start/Stop duty**

SLI or Starter Batteries are the largest product segment and account for approximately 50 % or 24 billion € of the world market volume of Lead acid batteries.

Their evolution is tied closely to the technical and commercial needs of the car industry with weight and cost savings, material recycling issues, frequent and more severe discharge cycles being the key development drivers.

The arrival of EV’s with propulsion power provided by Lithium batteries will result in a downsizing of the needed on-board Lead acid battery capacity.

The storage batteries for Hybrid vehicles (Battery + ICE) are dominated by Nickel-Metal hydride and Lithium batteries. The on-board SLI battery remains the Lead acid type.

**• Batteries for traction or motive power duty**

Traction or motive power batteries account for approximately 25 % or 12 billion € of the world market volume of Lead acid batteries.

This segment is more stable both in terms of product design and applications due to a large installed base of material handling vehicles and equipment where size and shape compatibility does not allow initiating radical product renewals. Updates of technical reports and specifications on battery monitoring and opportunity charging have been carried out recently.

In the past years a significant growth in electrically propelled two- and three-wheelers, or mopeds and light transport vehicles, has spurred a large increase in the number of produced small (< 30 Ah) 12 V Lead acid monoblocs. The market demand reached up to 300+ Million pieces per year in Asia. Their performance tests and requirements are defined in IEC 63193.

Lithium batteries are making inroads in the segment of motive power batteries for above applications due to advantages in specific energy and rapid rechargeability.

**• Batteries for stationary power supply duty**

The wide range of battery technologies and products currently available allows to provide the best solution to meet the user's expectation on a given market and application.

Stationary Lead acid batteries account for approximately 25 % or 12 Billion € of the world market of Lead acid batteries. These batteries are now predominantly of the VRLA type due to their advantages in terms of a reduced installation footprint and absence of battery electrolyte maintenance.

Lead acid battery evolutionary drive is related to the needs of the telecommunication and uninterruptible power supply industry.

Their performance optimizations are geared toward the extension of service life at elevated ambient temperatures, in order to reduce HVAC costs, and toward the increase of the capability to withstand frequent discharges and incomplete recharges as caused by marginal availability of power from the public grids.

Next to supplying emergency power, Lead acid batteries have captured a sizable market share in the field of renewable energy storage and power grid energy management. The intrinsic ruggedness and tolerance of Lead acid batteries against failure of subsystems, as also the short time from order to operation has proven valuable for capturing commercial orders. IEC 61427-2 supports such applications.

## D. Market Demand

The market segment for renewable energy storage, however, is submitted to the vagaries of local economic and regulatory conditions so that no worldwide uniform market development is expected.

TC21 is covering these market segments with 45 publications of which 39 are IS and the remaining being TS/TR and PAS documents.

The IS can be the base for verification of regulatory compliance once they have been transformed/translated into National or Regional Standards.

The key areas of **TC21/SC21A** standardization activities relate to:

**• Batteries for portable applications**

Portable battery applications have been the earliest adoption of lithium-ion batteries. Even in the portable sector, the applications using lithium-ion batteries have grown as they are now commonly used in portable tools (although nickel metal hydride are still in use), small portable appliances and appliances. With the restriction on nickel cadmium batteries, the use of nickel batteries in this area has declined. The lithium-ion battery use for portable applications is projected to be about 850 GWh by the year 2025 and 1450 GWh by 2030.

**• Batteries for industrial applications**

Batteries for industrial applications have widely used the Lead Acid, Ni-Cd and Ni-MH technologies mainly in applications for safety back-up such as commercial aviation, trains and subways, and these technologies are still widely used today.

**• Batteries for traction applications**

Because of the increasing electrification of transport modes over the past decade, the use of lithium-ion batteries has increased tremendously. Nickel Metal Hydride had been used exclusively in the Hybrid EV space for many years, but even HEVs are turning to lithium-ion batteries. Due to decreases in costs and because of greater energy capacity and the greater cycle life of lithium ion batteries, these chemistries have also been replacing lead acid in the industrial off road vehicle space, and there has been recent efforts to utilize lithium ion batteries for other off road transportation areas including rail, marine and for aerospace applications but very limited as of today for safety reasons and due to the cost of electronics required to monitor the lithium ion batteries. Another application for lithium-ion batteries that is on the increase is for smaller vehicle applications such as e-bikes and other personal e-mobility devices. In aviation, there is interest in the use of lithium-ion batteries for auxiliary power and for smaller aircraft for traction as well. Drones utilize lithium-ion batteries exclusively due to the energy density provided. The lithium-ion battery use for automotive and other transport applications is projected to be about 800 GWh by the year 2025 and 1400 GWh by 2030.

**• Batteries for stationary power supply duty**

Stationary applications have also seen an increase in the use of lithium-ion batteries, especially for energy storage grid tied applications that require increase cycling performance of the batteries. Because of their increased energy density, the decreases in prices, good cycle performance and minimal maintenance needs, lithium batteries have been replacing more traditional chemistries in this area such as lead acid and nickel cadmium. With the increased use of renewable energy, there is an increased need for energy storage to help provide a reliable source of power. Energy storage applications are also being utilized for various other grid support applications in addition to renewable energy, and lithium-ion batteries are the batteries often used for these applications. Although there are some concerns with the safety of lithium-ion batteries, their use even for stationary standby service, long the exclusive domain of lead acid batteries, is on the increase. The lithium-ion battery use for stationary storage applications is projected to be about 900 GWh by the year 2025 and 1500 GWh by 2030.

IEC SC21A has been developing lithium-ion battery and nickel battery international standards (IS) for portable, stationary, and off-road motive applications. The IS can be the base for verification of regulatory compliance once they have been transformed/translated into National or Regional Standards.

## E. Sustainable Development Goals

- ☐ **GOAL 1:** No Poverty
- ☐ **GOAL 2:** Zero Hunger
- ☐ **GOAL 3:** Good Health and Well-being
- ☐ **GOAL 4:** Quality Education
- ☐ **GOAL 5:** Gender Equality
- ☐ **GOAL 6:** Clean Water and Sanitation
- ☒ **GOAL 7:** Affordable and Clean Energy
- ☒ **GOAL 8:** Decent Work & Economic Growth
- ☒ **GOAL 9:** Industry, Innovation & Infrastructure
- ☐ **GOAL 10:** Reduced Inequality
- ☒ **GOAL 11:** Sustainable Cities and Communities
- ☒ **GOAL 12:** Responsible Consumption & Production
- ☒ **GOAL 13:** Climate Action
- ☐ **GOAL 14:** Life Below Water
- ☐ **GOAL 15:** Life on Land
- ☐ **GOAL 16:** Peace, Justice Strong Institutions
- ☐ **GOAL 17:** Partnerships to achieve the Goals

## F. Trends in Technology and in the Market

Lead acid battery technology allows for great flexibility in the design features and sizes. This facilitates the task to present cells and batteries with capacities spanning three orders of magnitude and with key performance values and associated costs optimized for each application.

The Lead acid battery industry is offering, with the basic design features of grid or tubular plates as well as flooded and immobilized electrolyte designs, a wide range of products. These products are optimized as a function of the required current delivery capability, ultimate energy content, required service life, and acceptable costs.

Current optimization efforts are as follows.

For SLI and start/stop duty

- Improvement of dynamic charge acceptance (DCA in A/Ah) of the battery so as to enhance the capability of the SLI battery to store the energy provided by regenerative braking
- Enhancement of cycle or service life under start/stop operating conditions
- Reduction of electrolyte water loss at extreme under-the-bonnet temperatures as encountered in inner-city driving

For traction duty

- Enhancement of charge acceptance and thermal management when an extension of the daily driving range is sought with the opportunity-charging methodology

For emergency power supply duty

- Enhancement of power delivery capability per installed battery volume ($A/m^3$)
- Extension of operating temperatures so as to relinquish active cooling (AC) in favour of forced ambient air cooling of the battery
- Improvement of cycle life and charge acceptance when the battery is providing back-up power in regions with very unreliable power grid operation

For renewable energy storage duty

- Enhancement of cycle life in partial state-of-charge condition when renewable energy smoothing is required
- Extension of calendar life at shallow depths of discharge as encountered in power grid frequency-management duties
- Improvement of ultimate ampere-hour throughput capability when peak-power shaving is the predominant usage

For propulsion power of lightweight vehicles

- Reduction of unit weight of the 300+ millions of 12 V monoblocs produced per year for two- and three wheelers in face of competitive pressures from Lithium-based systems.

These application-related optimizations are paired with continued cost, material, and energy usage reductions in the production of these batteries.

Such activities are for example the increased use of continuous grid and plate production methods in fully automatized assembly lines as also a re-emerging interest in bipolar cell design. Such bipolar cell designs offer the perspective of extremely compact, high voltage battery designs when the particular high demand on reliability, imposed onto each cell, can be met also in a large-scale production environment.

A further noteworthy development in the design of the electrochemical active mass of the Lead acid battery is the enhancement of the negative mass performance with the additions of carbon allotropes to its formulation. These additions enhance the structural stability and charge acceptance via a multitude of interactions,

In addition to the two dominant electrochemical systems, Lead acid and Lithium-ion, Flow batteries and High temperature Sodium-based systems are emerging as contenders in the energy storage market. Flow batteries offer the promise of large and easily scalable storage capacities extendible at will by simply increasing the size of the storage tanks of the electrochemically active solutions. If the need for storage capacities in the 100 MWh to 300 MWh range materializes in the future, then Flow batteries will become very attractive.

High-temperature batteries, based on the simple Na-S or the more complex Na-NiCl system, operate at approximately 300 °C and have found niche markets. Their more widespread use is, however, hampered by the very limited worldwide number of suppliers (2) of these battery types.

The use of batteries is experiencing a very rapid growth due to the switch from ICE to Battery-powered automobiles and the need to store increasing amounts of unpredictable renewable energy in batteries.

Lead acid batteries are under competitive pressures in those applications where specific energy, rapid recharge ability and the nominal cycle life are the dominant battery selection criteria. In these applications Li-ion batteries will increasingly dominate the market.

Lead acid batteries will, however, be the system of choice when a broad industrial base of suppliers, assured material supply, benign failure modes, and full recycling at the end of the service life are important criteria.

TC21 is also addressing, in collaboration with SC21A and with the project for IEC 63330 Ed 1 “Requirements for reuse of secondary batteries”, the topic of “a second-life for Lithium batteries”. This theme covers the desire/need to wring out from such batteries the remaining service life capabilities by downgrading their use, from a demanding first-life duty in an EV to a less demanding, second-life one, in energy storage duty. This approach would address the need for less battery materials waste and more environmental protection in their mining.

Identification of the involved battery chemistry is also in review with the preparation of IEC 62902 Ed 2 “Marking symbols for identification of their chemistry”.

There are a number of trends with the lithium-ion battery market in recent years including developing of chemistries and battery designs that can provide increase performance for new applications such as those requiring high power and higher energy.  Safety continues to be a concern with lithium-ion batteries, although there is generally a good track record overall with battery safety.  The focus on more robust cell designs and better sensor and control systems including revisions to various chemistries to improve safety has helped address these concerns.

In regards to lithium-ion technologies optimization, there has been a continuous effort to improve not only the performance but also the safety of these batteries.  This is through the reduction of rare metals and new combinations of cathode materials as well as new anode materials, but also through improvements to the separators and electrolytes through new materials, coatings and additives.  Improvements in the controls monitoring and protecting the batteries are also ongoing with adding increased capabilities in the battery management designs and sensors gathering the data for the BMS.

A new development in the vehicle applications world at this time is research into the solid-state lithium metal batteries which may offer even greater energy density, faster charging capabilities, and improved safety over traditional lithium ion type batteries with liquid electrolytes.  This work is currently ongoing.

## G. Systems approach aspects (See Directives Part 1 Annex SO)

Many end product battery committees are developing their own application specific battery criteria that is being driven by the use of lithium-ion batteries to now power these products. Although some committees are seeking the input of IEC TC21/SC21A for the development of their battery criteria, there have been some that have not. The issue with this approach is the potential development of insufficient or conflicting battery criteria. Although mechanisms exist within IEC to assure priority in battery standardization under the umbrella of TC21/SC21A, artefacts such as not properly declaring the scope of the standard or hiding the topic battery under the wording of generic electrical equipment, result in the fact that TC21/SC21A is not made aware of the planned activity.

In view of the increased permeation of the society by battery powered equipment and resulting horizontal standards IEC CO should reinforce their active oversight in this matter.

Whereas TC21 and SC21A can properly manage and coordinate the standardization activities in the lifecycle phases 1 and 2 of a battery (described in Chapter D), the user-driven standardization activities provide numerous points of contention when during the standard raising process TC21/SC21A is frozen out from the content formulation activity.

Next to missing the opportunity to provide input, also a multiplication of battery terms and definitions is noted which are written with doubtful and abstruse text adding to the confusion of the public when consulting such battery standards.

TC21 and SC21A provide standards for the core of electrical energy storage systems i.e. for the cells and batteries. In these standards their performance and safe operation is assured with a range of application-specific cell tests. The core of the activity is directed toward component qualification (cells and batteries) with more system oriented activities carried out in collaboration with the concerned TC's.

The bottom-up or cell-to-application standards generated by TC21 may not always cover the specific requirements demanded by the application and top-down or application-to-cell standards are desirable and needed.

TC21 and SC21A are cooperating in this bottom-up and top-down activities with multiple TC's of IEC and ISO and with the intent to assure that the interests of all battery stakeholders are safeguarded.

Such collaboration is however fraught with difficulties when the raising of the application-related battery standard is not carried out within a joint working group (JWG). In a JWG the experts of both involved TC's have an equal access to deliberations and voting. Such a structured and frictionless collaboration is not achieved when the standardization activity is monopolized, on an exclusive basis, by the TC having the application in its scope.

A flexible conflict-resolution mechanism by IEC CO is needed to defuse such situations without burning down irreversibly the collaboration bridges between TC's

An informative list of TC's with past and present interactions with TC21/SC21A is shown below

| | **Involved TC** | **Abridged scope of the TC** |
|---|---|---|
| **System committees with TC21/SC21A acting as supplier of standards** | TC8 | System aspects of electrical energy supply |
| | TC9 | Electrical equipment and systems for railways |
| | TC18 | Electrical installations of ships and of mobile and fixed offshore units |
| | TC22 | Power electronics and equipment |
| | SC 34D | Luminaires |
| | TC31/WG37 | Cell and batteries for equipment in explosive atmospheres |
| | TC61 | Safety of household and similar electrical appliances |
| | TC64 | Electrical installation and protection against electrical shocks |
| | TC69 | Electric road vehicles and electric industrial trucks |
| | TC82 | Solar photovoltaic energy systems |
| | TC88 | Wind turbines |

| | | |
|---|---|---|
| | TC108 | Safety of electronic equipment in communication technology |
| | TC116 | Safety of motor-operated electric tools |
| | TC120 | Electric energy storage systems |
| | ISO TC23 | Tractors and machinery for agriculture and forestry |
| | ISO TC20/SC 1 | Aerospace electrical equipment |
| | ISO TC110 | Industrial trucks |
| | ISO TC114 | Horology |
| | ISO TC207/SC3 | Environmental labelling |
| | ISO TC333 | Lithium |

| System committees with TC21/SC21A acting as customer of standards | Involved TC | Abridged scope of the TC |
|---|---|---|
| | TC1 | Terminology |
| | TC3/SC3C | Graphical symbols for use on equipment |
| | TC56 | Dependability |
| | TC82 | Solar photovoltaic energy systems |
| | TC85 | Measuring equipment for electrical and electromagnetic quantities |
| | TC120 | Electric energy storage systems |

| Other committees that produce standards used by TC21/SC21A | Involved TC | Abridged scope of the TC |
|---|---|---|
| | TC89 | Fire hazard testing |
| | TC104 | Environmental conditions, classifications and methods of test |
| | ISO TC61/SC 1 | Plastics |

| Other committees that produce standards similar to that of TC21/SC21A and liaised for technical consistency | Involved TC | Abridged scope of the TC |
|---|---|---|
| | TC35 | Primary cells and batteries |
| | TC105 | Fuel cells |

## H. Conformity Assessment

The standards in the portfolio of IEC TC21/SC21A contain extensive specifications for test methods and conditions as well as associated test result requirements with which conformity assessment can be carried out at ease.

The IEC standards are of voluntary type but nevertheless many of them find their translation into compulsory regional or national standards either literally or adapted to local conditions.

The application of IEC standards is dominant when materials, equipment and services are the subject of intensive international exchanges of goods and a single point certification is highly desirable.

The ever-increasing use of rechargeable batteries in equipment and devices close to the general public as also their potential impact on the environment upon their failure and final disposal require a continuous actualization and tightening of the safety standards for cells and batteries and installations thereof.

The status and actuality of the relative standards needs to be closely followed and frequent amendments and updates introduced.

This activity requires a tight integration of all involved TC's so as to provide up-to-date guidance for mitigating safety concerns and unfavourable impacts on the environment.

## I. 3-5 Year Projected Strategic Objectives, Actions, Target Dates

| Strategic Objectives 3-5 years | Actions to support the strategic objectives | Target Date(s) to complete the actions |
|---|---|---|
| Strategic Objectives 3-5 years | Actions to support<br>the strategic objectives | Target Date(s)<br>to complete the actions |
| Provide standards, technical specifications and reports to cover hotspots in cell and battery development within the scope of TC21 | Review with concerned stakeholders the need and content of such new documents | On-going |
| Provide standards, technical specifications and reports to cover environmental issues in battery development and usage a within the scope of TC21 | Review with concerned stakeholders the need and content of such new documents | On-going |
| | | |
| Note: The progress on the actions should be reported in the RSMB. | | |