Chugai ESG Meeting

CHUGAI PHARMACEUTICAL CO., LTD.

16 November, 2021

Important Reminders

This presentation may include forward-looking statements pertaining to the business and prospects of Chugai Pharmaceutical Co., Ltd. (the “Company”). These statements reflect the Company’s current analysis of existing information and trends. Actual results may differ from expectations based on risks and uncertainties that may affect the Company’s businesses.

Information regarding pharmaceuticals (including products under development) is included in this presentation, but is not intended as advertising or medical advice.

Chugai ESG Meeting

Agenda

01	Sustainability Management	Representative Director & Deputy Chairman **Motoo Ueno**
02	Materiality and ESG Ratings	Executive Vice President & CFO **Toshiaki Itagaki**
03	ESG in the Context of Growth Strategy Drug Development in Pursuit of Sustainable Healthcare	Vice President & Head of Clinical Development Div. **Tsukasa Kusano**
04	ESG in the Context of Growth Strategy Global Environmental Initiatives (Pharmaceutical Technology)	Head of Sustainability Dept. **Shigehiro Yamada, Ph.D.**

Sustainability Management

Representative Director & Deputy Chairman

Motoo Ueno

Chugai ESG Meetings

- Aiming to improve engagement and upgrade ESG initiatives through PDCA cycling -

2019
1st ESG Meeting
- ESG overview -

【Meeting topics】
・Value Creation by Chugai
・Material Issues
・IBI 21 and ESG Initiatives

【Lessons from meeting】
✓ Focus on stakeholder concerns
✓ Importance of strategy/planning

2020
2nd ESG Meeting
- ESG strategies/plans -

【Meeting topics】
・Progress toward sustainability
・Sustainability-related indicators
・Long-term plan (SCM/environment)
・Global health

【Lessons from meeting】
✓ Explanation of ESG as management strategy
✓ Breadth of risk analysis

2021
3rd ESG Meeting
- ESG as management strategy -

Relationship between growth strategy and material issues

Explanation of ESG carried out by business units as one component of management strategy

Outside Director's Message

- Significance of ESG meetings -

Outside Director

Yoichiro Ichimaru

Your candid input makes Chugai stronger

Chugai has adopted a basic policy of creating shared value with society and designated ESG as a medium/long-term management strategy. As part of its vision of becoming a top innovator by 2030, Chugai is ramping up ESG activities in the aim of being a role model for the world. Even my colleagues and I on the Board of Directors have experienced increased opportunities in discussing sustainability issues.

For Chugai to realize the advanced and sustainable patient-centric healthcare to which it aspires, it is crucial for all employees to first and foremost take personal responsibility for business activities, including the ESG aspects thereof, and create shared value in their respective workplaces. I believe the pandemic has strongly reaffirmed that Chugai can alleviate burdens and contribute to quality of life for not only patients and their families but also the entire medical profession.

Again such a backdrop, I consider ongoing engagement around ESG, including this meeting, to be a meaningful driver of the cycle whereby we identify external stakeholders' expectations, needs and wishes and incorporate them into Chugai's management. I personally spent my career in the auto industry but much of my experience is transferable across sectors or industries. From the standpoint of creating new value by capitalizing on diversity, I look forward to earnestly engaging with Chugai employees and various external stakeholders.

Environmental Changes and Business Strategy

- We are implementing a new growth strategy formulated in light of changes in the environment and progress in activities -

Changes in external environment

【Society】
- COVID-19 resurgence
- Growing environmental risks besides climate change
- Escalation of geopolitical risks
- Advancements in AI, IoT and other technologies

【Economy/corporate sector】
- Adaptation to new-normal society
- Ongoing digital transformation
- Reconfiguration of work modalities and HR strategies
- New recommendations on various initiatives
- Revision of Japan's Corporate Governance Code

- External environment scenario analysis
- Risk analysis
- Reassessment of materiality

- Promotion/implementation of various activities
- Analysis of IBI 21 results/progress
- Identification of issues

TOP INNOVATOR TOPi 2030

Formulation/execution of New Growth Strategy

Business strategy integrating growth strategy and sustainability

Basic Policy (Envisioned Future)

- Emphasis on alignment among mission, growth strategy and material issues -

Increased corporate value

Chugai growth and development

=

Creation of value shared by Chugai and Society

Realize advanced and sustainable patient-centric healthcare

=

Resolution of social issues

Social growth and development

Envisioned Future for 2030

Top innovator in the healthcare industry

TOP INNOVATOR TOP i 2030

Material issues (25 issues across 8 categories)

Year in Review: Progress in ESG-related Activities

- We made steady progress while adapting to changes in the environment -

Sustainable Healthcare	・Made brisk progress in drug discovery/ development ・Launched new products, additional indications ・Accelerated DX, most notably AI-based drug discovery ・Made progress in developing/supplying COVID-19 therapies
Corporate Governance	・Board of Directors' effectiveness assessed by external third party ・Installed ERM system ・Promoted engagement with stakeholders
Ethics and Compliance	・Monitored compliance ・Formulated purchasing policy and educated employees on it
Supply Chain Management	・Made progress toward realizing digital plants ・Formulated Supplier Code of Conduct and shared it with suppliers ・Conducted supplier risk assessment
Global Environment	・Formulated Mid-Term Environmental Goals 2030 ・Conducted scenario analysis based on TCFD recommendations ・Made progress toward environmental goals
Human Resources	・Implemented new HR system ・Strengthened talent management ・Secured talent with high-level expertise ・Formulated/implemented new ways of working
Human Rights	・Conducted human-rights due diligence on contractors ・Implemented safeguards for clinical trial subjects
Social Contribution	・Codified social contribution activities, reset priorities ・Promoted global health activities

Example: Responsibility for COVID-19 Drug Access

- Initiatives to ensure stable supply of Actemra -

Actemra for COVID-19 pneumonia treatment

Overseas: recommended in WHO guidelines (July 2021)
US: emergency use authorization granted by FDA (June 2021)
Japan: filing scheduled in 2021

Stable supply initiatives

Built expandable production network across Roche Group before demand spiked

- Equipped Utsunomiya Plant with expandable production capacity
- Expanded outsourcing of formulation process to Genentech
- Maximized production by ramping up production network and transferring technology through contracts with large-scale manufacturers

More than doubled supply in 2021

Further initiatives in response to COVID-19

Supply shortages due to global demand spike in excess of doubled supply

- Production capacity limitations
- Raw material supply constraints
- Biologic production processes' complexity and labor-intensity
- Dynamic changes in COVID-19 pandemic

Roche Group-wide initiatives to improve drug access and combat COVID-19

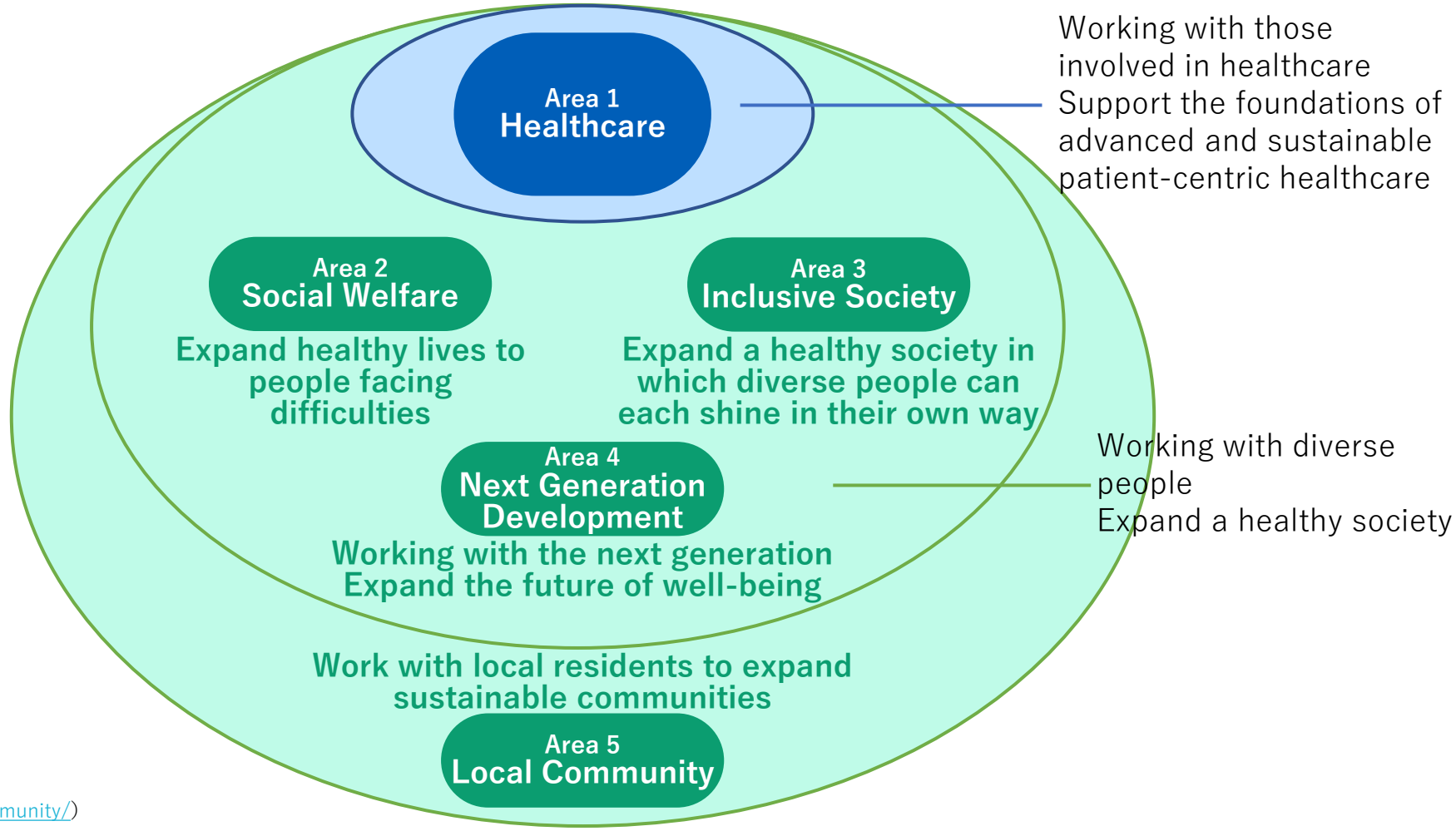
- Strengthened distribution strategy in close coordination with global health authorities and partners
- Waived both Chugai and Roche's patent protection in low/middle-income countries
- Expedited development and mass marketing of therapies for mild/moderate cases (e.g., Ronapreve, AT-527) to prevent to develop severe symptoms

Example: Reprioritization of Social Contribution Activities (1)

- Goals to Achieve Through Social Contribution Activities -

In our social contribution activities, we will support a foundation for advanced and sustainable patient-centric healthcare, and will work to advance initiatives for expanding a healthy society, centered on the following five areas.

- We have codified our approach to social contribution activities to realize our mission.
- We will focus on our five priority areas – healthcare, social welfare, inclusive society, next generation development, and local community – to respond to social needs.
- We define social contribution activities as activities that help to solve social issues and, in turn, realize our mission. They do not include business activities that directly lead to financial gain.



Reference: social contribution activity policies
(https://www.chugai-pharm.co.jp/english/sustainability/community/)

Example: Reprioritization of Social Contribution Activities (2)

- Focusing on highly societally relevant initiatives in five priority areas -

Area 1 Healthcare	**Support the foundations of advanced and sustainable patient-centric healthcare**	・Promoting research and education in medicine and pharmacology (support for, e.g., Tokyo Biochemical Research Foundation's activities) ・Supporting patient treatments and livelihoods (e.g., activities to raise awareness of diseases, collaboration with patient groups) ・Improving access to health and medical care for the world's people (e.g., support for diagnosis/treatment of non-communicable diseases in low/middle-income countries)
Area 2 Social Welfare	**Expand healthy lives to people facing difficulties**	・Improving the lives of the elderly and those with disabilities (e.g., paratransit vehicle donation program) ・Supporting children in developing countries and refugees (support activities through, e.g., Roche Children's Walk)
Area 3 Inclusive Society	**Expand a healthy society in which diverse people can each shine in their own way**	・Promoting inclusivity through sports (e.g., parasports promotion activities) ・Promoting inclusivity through cultural activities (support for, e.g., art/music/dance activities open to people with disabilities) ・Promoting women's participation and advancement (e.g., sponsorship of women's empowerment events under the theme "living your authentic life")
Area 4 Next Generation Development	**Working with the next generation Expand the future of well-being**	・Cultivating interest in biotechnology/science (e.g., hosting of experimental biology seminars) ・Advancing career education for students (e.g., hosting of company tours for schoolchildren, guest-lecturing at schools) ・Expanding learning opportunities through website (e.g., publication of information on biotechnology and drugs)
Area 5 Local Community	**Work with local residents to expand sustainable communities**	・Preserving the natural environment (activities to, e.g., preserve watershed forests from which Chugai sites source water) ・Promoting local community activities (e.g., participation in community events local to Chugai sites) ・Restoring and reconstructing disaster-stricken areas (e.g., disaster relief activities)

Sustainability-related Governance

- Board of Directors and Executive Committee are increasingly devoting time to sustainability matters -

Board of Directors' main sustainability-related agenda items (Jan 2020 - Sep 2021)

Governance

- Convocation of and agenda-setting for General Meetings of Shareholders; approval of business reports, financial statements, etc.
- Nomination of director and Audit & Supervisory Board member candidates; appointment of Appointment Committee and Compensation Committee members
- Appointment/dismissal of **representative directors**, executive officers and advisors
- Directors' remuneration
- Implementation and reporting of evaluation of effectiveness of Board of Directors
- Reporting on internal control, **risk management**, and IR activities
- Verification of cross shareholdings
- Approval and reporting of transactions in competition with the Company and other conflict-of-interest transactions
- Review of revised version of Japan's Corporate Governance Code

Social and environmental

- **Formulation of TOP I 2030 (matters related to foundation for growth and sustainability)**
- **New production facility construction plans, R&D facility consolidation plans**
- **Matters related to stable Actemra supplies**
- HR-related reporting
- **Formulation of Mid-Term Environmental Goals 2030**

Executive Committee's main sustainability-related agenda items (Jan 2020 – Oct 2021)

Environmental

- Mid-Term Environmental Goals' content/goal-setting
  (Jan., Jul., Sep. 2020, Jan. 2021)
- Measures implemented to achieve Mid-Term Environmental Goals and progress reporting
  (Jul. 2021 (twice), Oct. 2021)

HR

- Domestic group companies' HR management reforms, HR system changes
  (Nov. 2020, May 2021)

Other

- Chugai Pharmaceutical Corporate Pension Fund's endorsement of Japan's Stewardship Code
  (Oct. 2021)

Note: Underlining denotes agenda items for which advance briefings and/or Board deliberations were augmented in 2020

Example: Mid-Term Environmental Goals 2030's Formulation Process

- We set ambitious goals with external input -

Analyze/discuss Review mid-term environmental plan 2020

【Research/analyses】
- Gap analysis vs. external evaluations
- Scenario analysis based on TCFD recommendations
- Materiality reassessment
- Environmental technology survey

【Gathering of external input/discussion】
- Input from external experts
- External workshops
- Discussions with outside directors

Identify environmental issues

Formulate/set direction and rubrics

Set policies Assess goals

【Formulate policies】
- Divisional discussions of policies/goals
- Coordination with Roche's environmental compliance staff
- Commitment by senior management

【Approach to goals】
- Longer-term timeline
- Focus on material items' comprehensiveness
- Goal-setting based on ambitions, not attainability

Finalize environmental goal-setting policy

Forward to EHS and Executive Committees for deliberations

【Bodies that deliberated on policies/plans】
- EHS Promotion Committee (4 times)
- Executive Committee (4 times)
- Board of Directors (twice)
- Meetings with senior management (4 times)
- Sustainability Advisory Committee (twice)

Finalize plan's core content (partially disclosed)

Assess milestones

Disclose Mid-Term Environmental Goals 2030

【Disclosures】
- Financial results briefings
- News releases
- Annual Report 2020
- Website

【Feedback/recommendations】
- Need for disclosure of milestones
- Need for engagement on specific initiatives

(this ESG Meeting)

Specifically explain milestones

Aiming to become Role Model for the World

- Grinding out PDCA cycle iterations based on creating shared value through innovation -

Envisioned Future for 2030

Top innovator in the healthcare industry

Expectation from patients all over the world

Attracting talent and players from around the world

Role model for the world

Recognized for its ESG initiatives through its business activities, Chugai will become a global role model as a leader in resolving social issues.

Steps toward becoming role model for the world

External

Identify expectations/needs/wants and respond at high level

- Continuously keep abreast of changing expectations/needs/wants
- Earn top-level ESG ratings (e.g., DJSI inclusion, surveys)
- Be a company indispensible to society

Internal

Create shared value through innovation

- Pursue innovation in both results and process
- Proactively adapt to changes in environment at individual workplace level
- Continuously progress in terms of communication and disclosure

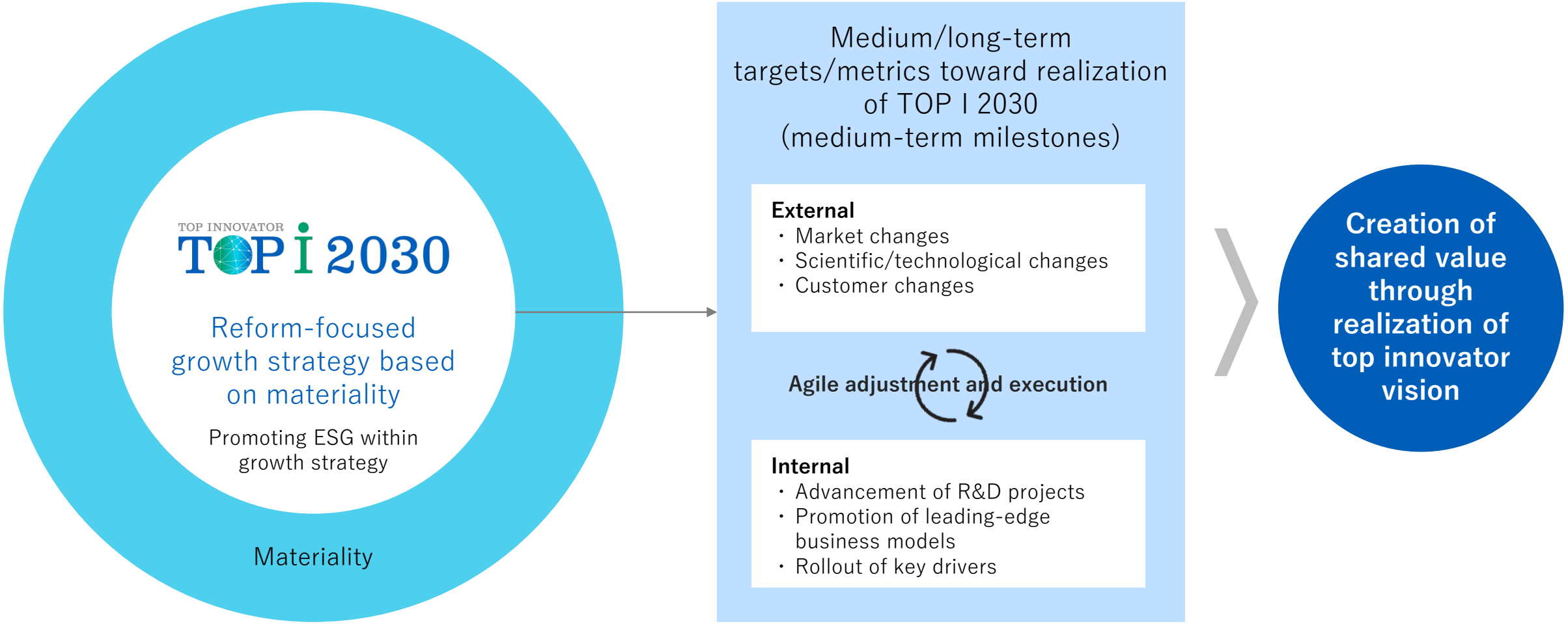
Materiality and ESG Ratings

Executive Vice President & CFO

Toshiaki Itagaki

Materiality and Growth Strategy

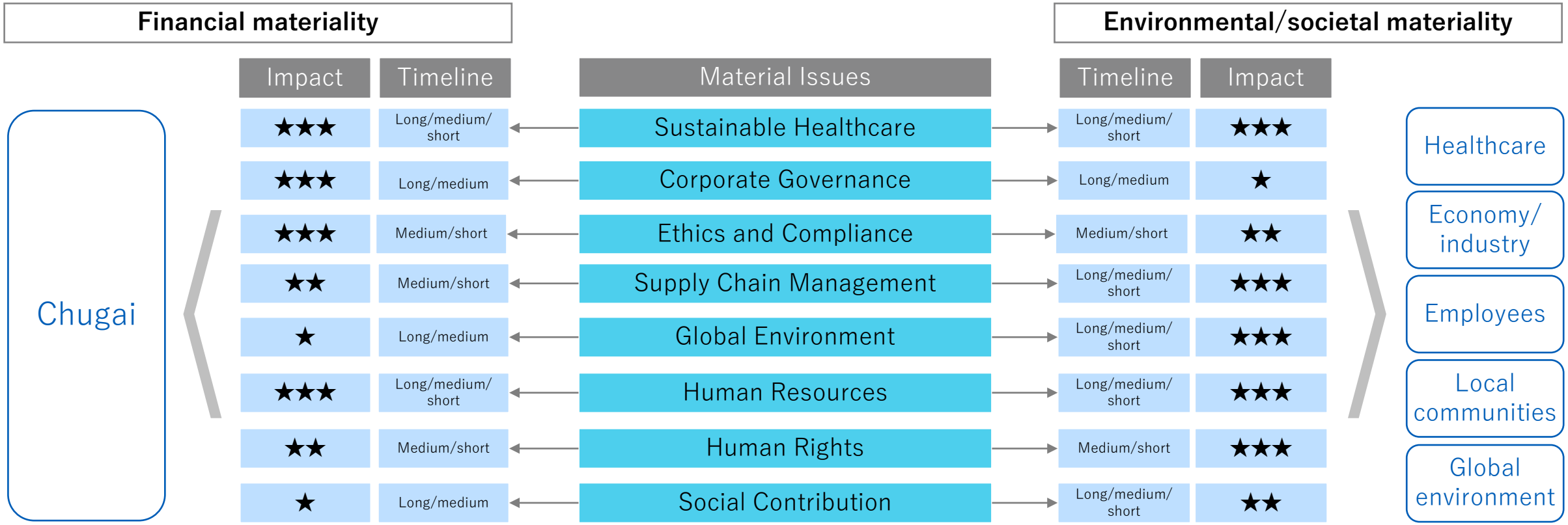
- Promoting ESG through our TOP I 2030 growth strategy linked to materiality -



Management Strategy's Underlying Materiality Assessment

- We have reassessed impacts and timelines based on double materiality -

- We have clarified material issues' impacts and timelines based on a (strategic/operational) risk assessment (see page 54 of Annual Report 2020 for summary of risk assessment)
- We have assessed our material issues based on the double materiality concept in the European commission's Non-Financial Reporting Directive and proposed Corporate Sustainability Reporting Directive.



Reference: Existing Indicators for Materiality

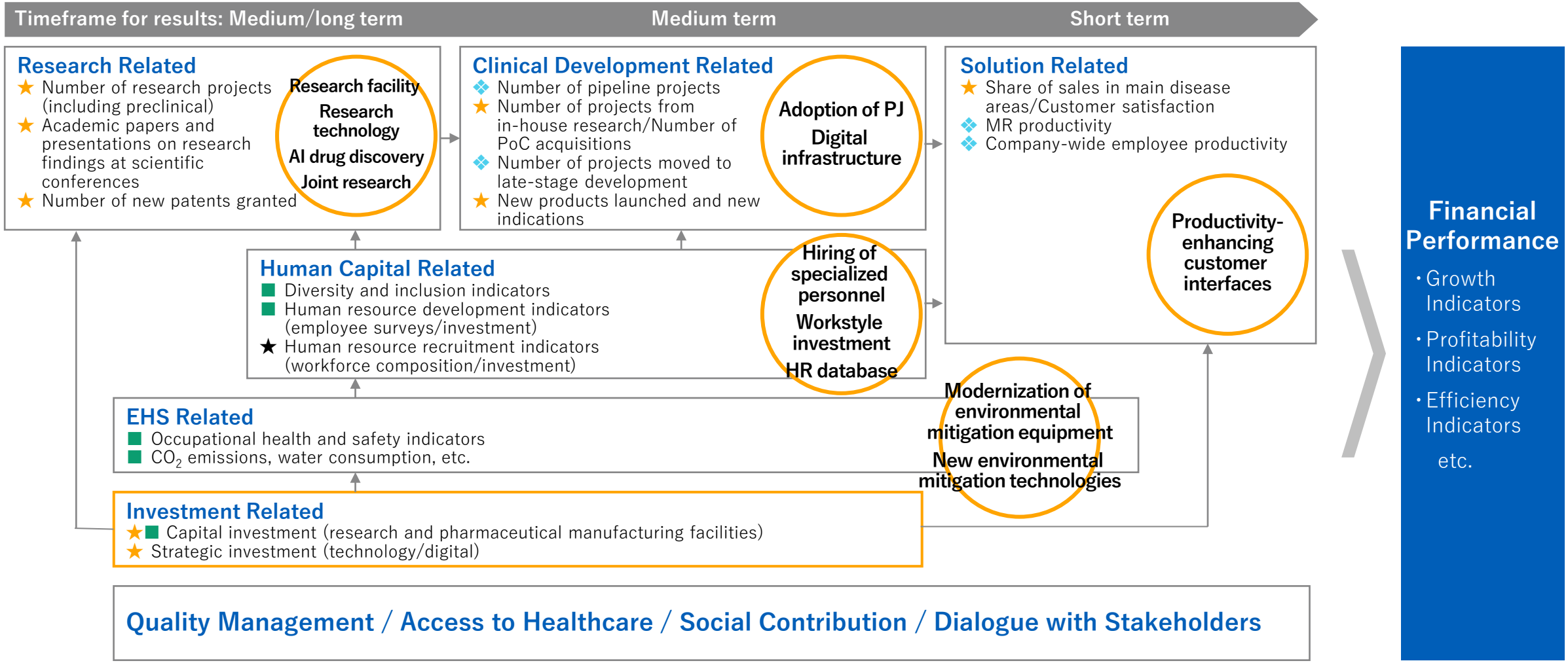
- We set goals/indicators for individual material issues -

Category	Material Issue	2020-21 indicator(s)
Sustainable Healthcare	Creation of innovative drugs and services	・New products launched and new indications ・Number of projects and products based on PHC
	Provision of solutions for patients	・Market share in therapeutic area ・Customer satisfaction
	Fair marketing	—
	Fair pricing	—
	Adverse event management	・Customer satisfaction
	Quality assurance and stable supply of products	—
Corporate Governance	Corporate governance	・Review of Board of Directors effectiveness
	Risk management	—
	Disclosure and engagement	・ESG meeting for institutional investors and media
Ethics and Compliance	Compliance	・Compliance monitoring
	Code of conduct	・CCC and human rights training in Japan
	Fair transactions	—
Supply Chain Management	Supply chain management	・Risk assessment of major contract manufacturing organizations (CMOs)
Global Environment	Climate change countermeasures (energy, etc.)	・Scope 1+2 CO_2 emissions ・Scope 1+2 energy consumption ・Sustainable electricity ratio ・Fuel consumption by MR vehicles ・Halogenated hydrocarbons
	Use of renewable/recycled resources (water, waste, etc.)	・Industrial waste reduction ・Plastic waste reduction ・Water resource conservation (Water withdrawal)
	Protection of biodiversity (environmental burden mitigation)	・Chemical substance management (SVHCs) ・Hazardous waste reduction
	Environmental management system	・Expand verification items and scope
Human Resources	Employee job satisfaction	・Rate of paid leave taken ・Work-from-home (WFH) participation rate ・Employee awareness survey
	Development of employee potential	・Number of next-generation leader candidates
	Diversity and inclusion	・Ratio of female managers ・Ratio of female managers (with subordinates)
	Improvement of occupational health and safety	・Prohibit smoking during work
Human Rights	Human rights	・Human rights due diligence on contractors
	Safety of clinical trial subjects	—
Social Contribution	Social contribution activities	・Set for each program
	Improvement of access to healthcare	・Set for each program

Nonfinancial Indicators in TOP I 2030

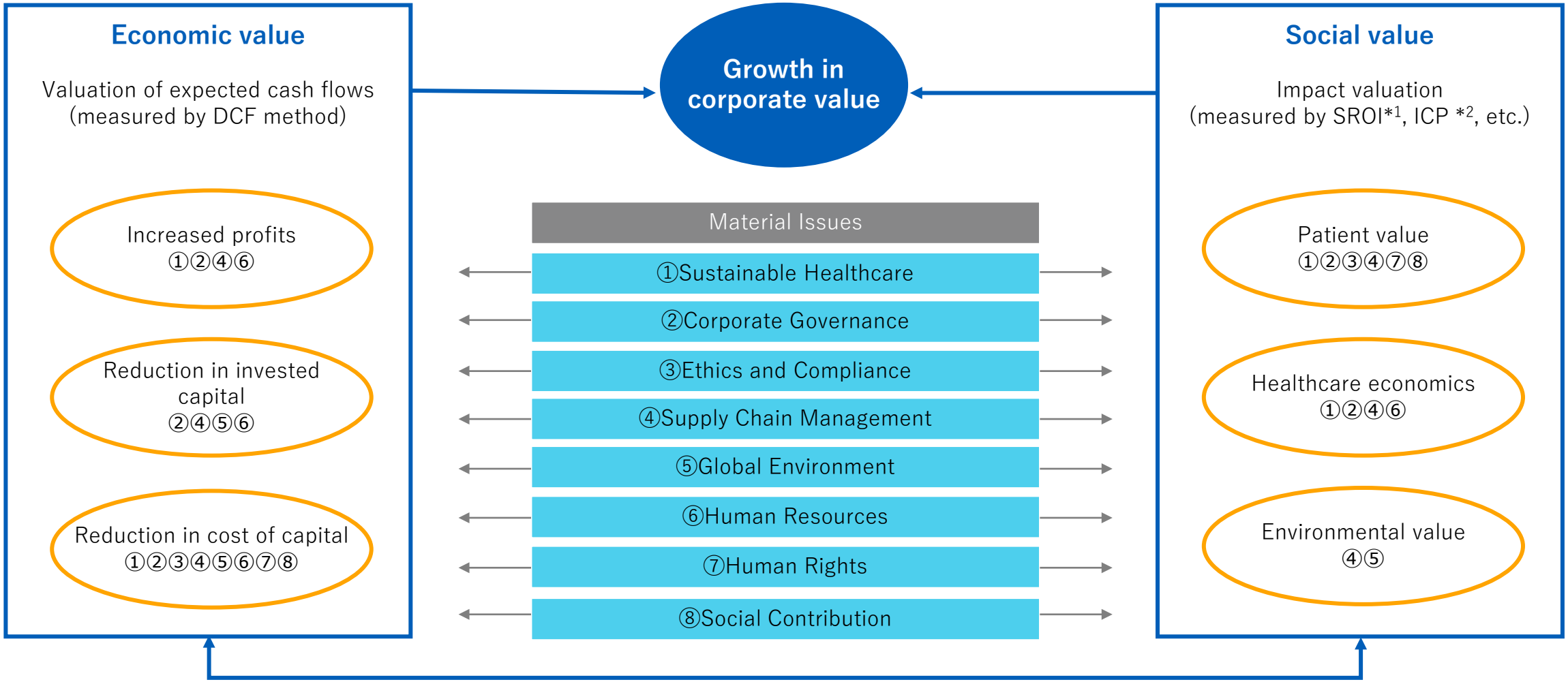
- Resource allocation and nonfinancial indicator trends -

○ : TOP I 2030's main areas of investment ★ : Indicators of RED shift's direct impact
❖Indicators of impact of productivity improvement and strengthening of functions due to RED shift ■Indicators of impact of strengthening foundation for growth



ESG Initiatives and Corporate Value

- Corporate value = Economic value + Social value -



＊1 SROI: Social Return on Investment　＊2 ICP: Internal Carbon Pricing

Example: HR-related Indicators (1)

- HR/organization strategies and indicators in TOP I 2030 (foundation for growth) -

Thoroughly implement new HR system

- Promote good fit between employees and their jobs to realize growth strategy
- Expedite development of next-generation leader candidates through strategic job rotations
- Foster an organizational culture that encourages bold challenges

(Indicators monitored)
- Number of next-generation leader candidates
- One-on-one check-in rate between superiors and subordinates

Acquire highly specialized talent

- Hire data scientists by developing new recruitment methods
- Strengthen internal identification and development of digerati
- Implement autonomous learning with i-Learning learning management system

(Indicators monitored)
- Job-fill rate for essential positions
- i-Learning utilization rate

New ways of working

- Expand ranks of active employees through new ways of working
- Adopt telework model based on work from home and satellite offices
- Adopt highly flexible work modalities that boost productivity and job satisfaction

(Indicators monitored)
- Employee awareness survey (active employees)
- Ratio of teleworkers to on-site staff

Ongoing promotion of diversity and inclusion (D&I)

- Foster an innovation culture by promoting D&I
- Widely and persistently practice three behaviors conducive to inclusion
- Expedite promotion of female managers

(Indicators monitored)
- Ratio of female managers
- Employee awareness survey (D&I)

Example: HR-related Indicators (2)

- Trends driven by implementation of TOP I 2030 (RED shift and HR strategy) -

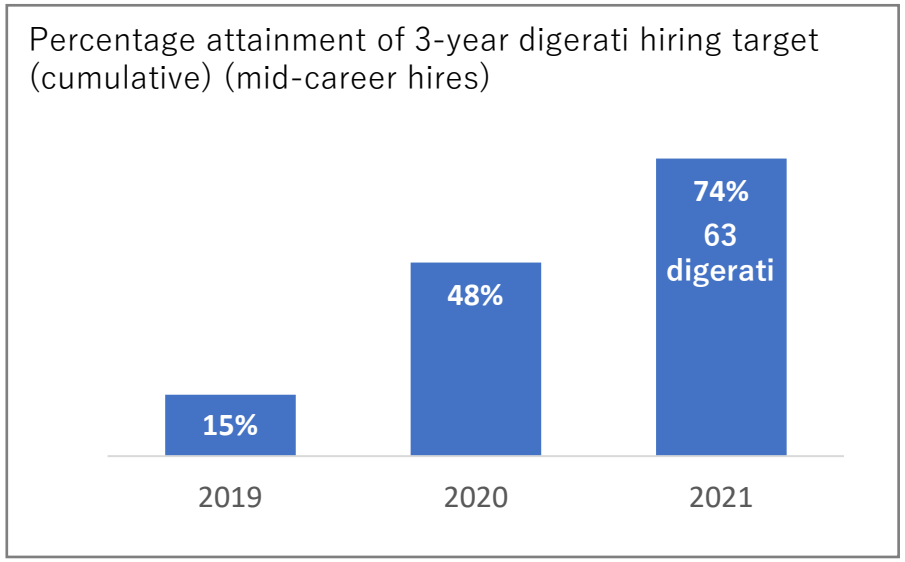
【Acquire highly specialized talent】

- Steadily recruit digerati and scientific personnel by manifesting TOP I 2030's HR vision and implementing its hiring strategies
- We are identifying digerati through internal surveys and internally developing over 100 digerati annually through the newly established Chugai Digital Academy

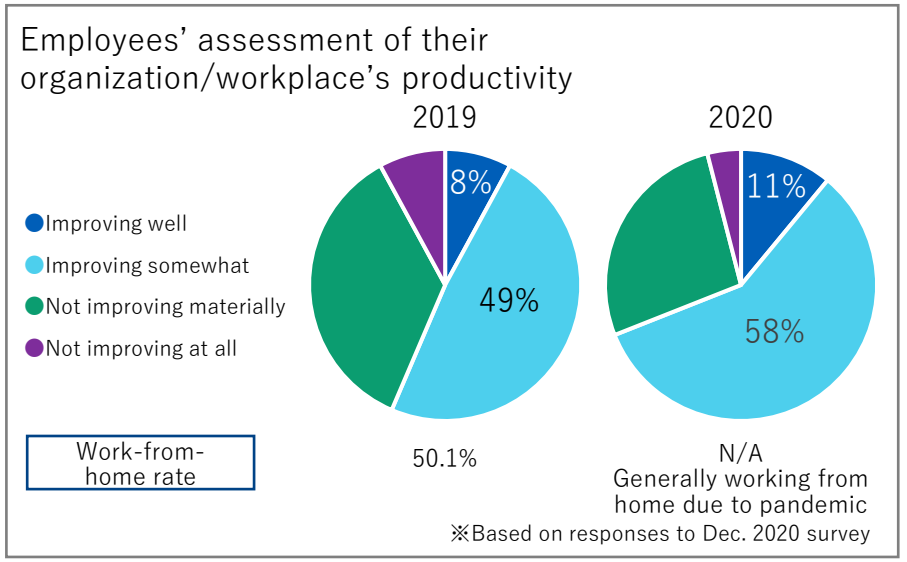
【New ways of working】

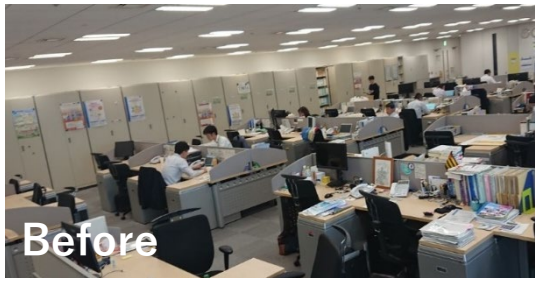
- Continue to maintain or increase productivity amid rapid shift to working from home in response to pandemic
- Optimally combine telework and on-site work to generate synergies in terms of productivity and job satisfaction

Digerati recruitment



Productivity improvement due to workstyle reforms





Improvement Through Issue Analysis Conducted So Far

- Using gap analysis to identify issues and drive PDCA cycle -

2018

External evaluations
- **Mid-level in Asia**
- Issues: lagging behind in human rights, SCM, drug access

Strategic challenges
- Getting all organizational units involved
- Lack of clarity on company-wide priorities

【Actions taken in response】
- Clarified creation of shared value
- Specification of materiality

2019

External evaluations
- **Top level in Asia**
- Rectified previous year's issues to global level

Strategic challenges
- Strengthening company-wide commitment
- Lack of clarity on stakeholder engagement indicators

【Actions taken in response】
- Set target to be included in DJSI World Index in 2020
- Disclosed material issues and goals

2020

External evaluations
- **Global level**
- Included in DJSI World Index for first time
- Still below global average in some areas

Strategic challenges
- Implementing medium/ long-term initiatives
- Augmenting ESG information disclosure

【Actions taken in response】
- Set Mid-Term Environmental Goals 2030
- Set ESG survey response priorities and augmented information disclosure

2021

External evaluations
- **Global top level**
- Ranked 2nd in DJSI World Index
- ESG gap analyses becoming less effective

Strategic challenges
- Launching original initiatives to become a role model for the world

Response to External ESG Ratings

- Priorities identified based on results of analysis -

○Stable high ranking △Stable low ranking ↗Higher rating →Unchanged rating ↘Lower rating

	Key 2020-21 initiatives	2020 rating	2021 rating
Materiality	・Augmented disclosure of material targets, etc.	↗	○
Corporate governance	・Appointed female director ・Upgraded assessment of Board of Directors' effectiveness (third-party assessment) ・Disclosed how officers' performance-based remuneration is set, including indicators used in the process ・Disclosed Appointment and Compensation Committees' membership ・Upgraded information security/cybersecurity	→	→
Risk management	・Updated risk factors and augmented disclosure thereof ・Factored risk management indicators into executive remuneration	↗	○
Supply chain management (SCM)	・Made progress toward PSCI-compliant SCM and augmented disclosure of SCM initiatives ・Systematically disclosed SCM process ・Compiled labor safety indicators for outsourcing service providers	↗	○
Global environment	・Formulated medium/long-term environmental plans/targets ・Analyzed sensitivity to climate-change/water risks and disclosed financial impacts ・Expanded scope of both data from which indicators are compiled and third-party assurance	○	○
Human resources	・Recruited and retained talent ・Commissioned third-party audit of occupational health and safety indicators	○	○
Human rights	・Prepared human-rights risk map ・Systematically disclosed initiatives to address human rights issues	↗	↗
Social contribution	・Disclosed program for carrying out social contribution activities	↗	↗
Healthcare access	・Expanded initiatives targeted at local healthcare needs/challenges ・Acted on strategy to improve drug access and addressed cost burden	↗	→
Tax strategy	・Newly formulated and disclosed tax policies	↗	○

Augmentation of ESG Information Disclosure

- We are committed to increasing disclosure of idiosyncratic ESG information also -

- We are committed to ESG disclosure from the standpoint of both meeting growing societal expectations/needs and sharing strategic progress
- As a result, our external ESG ratings (e.g., DJSI, FTSE) have been improving
- We plan to expand third-party assurance audits and strive to improve Sustainalytics risk rating

Newly disclosed ESG information

Governance-related	・Board of Directors and Executive Committee's main agenda items ・Assessment of Board of Directors' effectiveness (results, progress) ・Directors and Audit & Supervisory Board members' expertise and experience ・Performance-based remuneration-setting process, including performance indicators used ・Risks and risk management policies (risk scenarios, severity of impacts, risk appetite policies)
Social	・Supplier evaluations (targets, number of suppliers evaluated, evaluation results, improvements) ・Improvement in access to healthcare (basic policies, progress) ・Basic approach to social contribution activities ・Product quality assurance (number of recalls) ・Employee remuneration (average pay disaggregated by position/gender)
Environmental	・Addition of new mid-term environmental goals (previously 4 goals, now 10) ・CO_2 emission reduction roadmap ・Sensitivity analysis and financial impacts of climate-change/water risks based on TCFD recommendations
HR-related	・Employee awareness survey results (engagement, workplace environment) ・Hiring of digerati, percentage of job openings filled internally ・HR development indicator (education/training expenses per employee) ・D&I indicators (e.g., female manager ratio, male employees' childcare leave usage rate)

Future Direction and Sustainable Growth Through ESG Analysis

- Evolving into a role model for the world -

- We have earned global-level ratings through gap analysis and, in the process, raised awareness and built out an ESG regime across organizational units.
- Going forward, we will pioneer original initiatives to become a role model for the world.

Current external ratings

Member of Dow Jones Sustainability Indices Powered by the S&P Global CSA	2nd in world
CDP DISCLOSURE INSIGHT ACTION	A-
SUSTAINALYTICS a Morningstar company	33rd out of 452
MSCI	AA
FTSE4Good / FTSE Blossom Japan	4.2
MSCI JAPAN EMPOWERING WOMEN INDEX (WIN)	8.05

What we can gain through analysis of ESG issues

・Information useful for sustainability management
- Ascertained sustainability trends of importance to pharmaceutical industry
- Improve relative stature within pharmaceutical industry
- Obtain information useful for materiality analysis and KPI selection

・Upgrade internal ESG regime through responses to surveys
- Cascade ESG initiatives down to individual organizational units, improve cross-organizational coordination
- Build ESG reporting function
- Make progress in building sustainability strategy

・Objective evaluation as a sustainable company
- Increase attractiveness to long-term investors
- Enhance reputation in eyes of patients/healthcare providers
- Improve employee morale

Role model for the world

ESG in the Context of Growth Strategy

Drug Development in Pursuit of Sustainable Healthcare

Vice President & Head of Clinical Development Div.

Tsukasa Kusano

Value Shared with Patients in Development Stage

- Adding value with TOP I 2030 growth strategy's priority initiatives -

	Address unmet medical needs	Increase development success rate	Accelerate time to market	Evaluate QOL*1, the true endpoint
For patients	・Access to innovative new drugs ・Treatments for rare diseases	・Smaller-scale clinical trials ・Reduced burden	・Expedited access to new drugs	・Objective proof of QOL ・Fulfillment of therapy and expansion of treatment options
For Chugai	・Provision of innovative new drugs ・Growth in corporate value	・Advancement of development technology ・Increased productivity & profitability	・Competitive advantage in development ・Growth in cash flow	・Maximization of product value ・Advances in understanding patients
	✓ **Strengthen communication with regulatory authorities** ✓ **Identify clinical needs** ✓ **Strengthen medical/ safety science capabilities**	✓ **Strengthen biology research** ✓ **Improve prediction accuracy** ✓ **Utilize M&S*2, human organoids, RWD*3**	✓ **Strengthen clinical science capabilities** ✓ **Reform development model** ✓ **Coordinate with early commercial production**	✓ **Develop assessment** ✓ **Develop digital biomarkers**

*1 QOL: Quality of Life *2 M&S: Model & Simulation *3 RWD: Real World Data

Core Value in Development Stage: Patient Centricity

- We will realize our 2030 vision by pursuing patient centricity -

FOSTER A SHARED COMMITMENT TO DEVELOPING NEW DRUGS AND BUILD RELATIONSHIPS OF TRUST AMONG PATIENTS, HEALTHCARE PROVIDERS AND CHUGAI EMPLOYEES

Patients feel more engaged in clinical trials and develop a collaborative mindset as they have access to extensive clinical trial information and are given more opportunities to express their views.
Chugai is able to develop new value-added drugs based on input from patients.

Sharing & Informing
(Give)
Provide participants/patients with information

Cooperating & Participating
(Take)
Listen to patients' voices & utilize them

Definition of Patient Centricity

Drug Development Together with Patients

Understand & consider patients, based on our core value,
"Make each patient's wellbeing our highest priority."

Clinical Trials Harmonized with Patients

- Patients as Partners -

- We design protocols in collaboration with patients by involving patients in the clinical trial process
- In recent surveys of clinical trial subjects, positive to participate in clinical trials as "a good opportunity to let the company and others know about their illness"

Preparation

Patient Survey

- UMNs
- Preference
- Quantitative Endpoints
- Protocol/ICF

Clinical study ongoing

eConsent

- Multimedia incl. video
- Dictionary / Glossary
- Comprehension up
- E-signature

Digital Biomarker

- Object. Evaluation
- True Endpoints
- Improve QOL
- Clinical settings

Thank you letter

- Appreciation
- Pts as a partner

Adoption of PRO-CTCAE

- Evaluation by pts
- Understand symp.
- Pts adherence

Termination

Layperson Summary

- Report for pts
- Plain words & expression

Patient Survey

- Anxiety
- Motivation
- Requests

ICF: Informed Consent Form

eConsent: Electronic Informed Consent

pts: patients

PRO-CTCAE:
Patient Reported Outcome
Common Terminology Criteria for Adverse Events

Case Study: Digital Solutions for Endometriosis

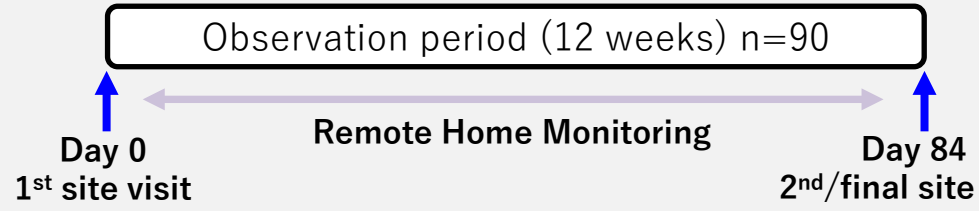
- Development of an objective, ongoing method of pain assessment, a key challenge in medical diagnosis/treatment -

Issues：
- Pain assessment is subjective
- Patients have difficulty accurately reporting their pain's severity, duration, etc.
- Changes in pain over time cannot be adequately ascertained through outpatient visits

Solution:
- **Identify objective and consecutive assessment of continuous pain**
- **Promote understanding of endometriosis and alleviate patient burden (psychological, time-wise, cost-wise) by developing new biomarker**

Protocol:
- We are developing an objective pain assessment method through an observation study of endometriosis patients (conducted jointly with Biofourmis*1)
  - ✓ Collect vital sign data (pulse rate, blood volume, body temperature) via a wearable device (Empatica E4®*2)
  - ✓ Collect patient-reported pain assessments (on a numeric rating scale (NRS)) via a smartphone app
  - ✓ Construct a pain index through algorithmic analysis of the collected data
  - ✓ Validate pain index through comparison with patient-reported pain (NRS) assessments

Global multicenter observational study (NCT04318275)




Wearable device


Patient-reported pain assessment (NRS)

*1 Joint study with Biofourmis (July 22, 2020, press release)　*2 https://www.empatica.com/research/e4/

Use of Decentralized Clinical Trials (DCTs)

- Clinical trial model not dependent on visits to trial site -

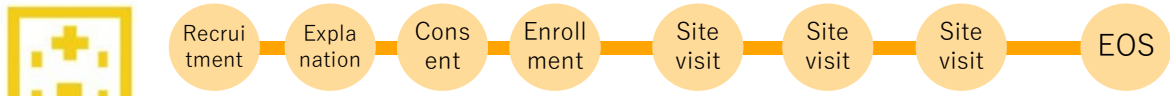
Patient-centric

- **Reduction in burden of participation in trials**
  DCTs alleviate psychological burden by offering more options (televisits/site visits)
- **Increased access to trials**
  DCTs reduce time demands imposed by site visits
- **Increased engagement**
  DCTs increase patients' engagement with clinical trials by incorporating new functions, programs and systems in addition to features such as home visits by nurses and online consultations

Improved clinical trial efficiency

- **Shorter trials**
  DCTs shorten the enrollment period and enable real-time data collection
- **Improved data quality/increased data quantity**
  DCTs reduce (1) the risk of data insufficiency by collecting more direct and real-time data and boosting patient retention and (2) the risk of having to reopen enrollment due to greater patient attrition than expected

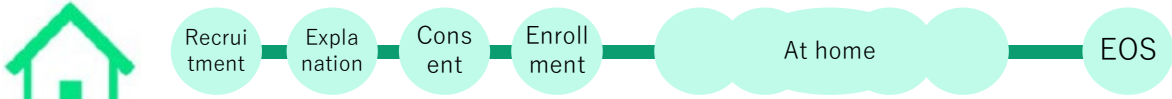
Conventional clinical trials



In-person

- In-person medical consultations
- Exams/tests done at trial sites
- Drug administered and documents handed out at trial sites

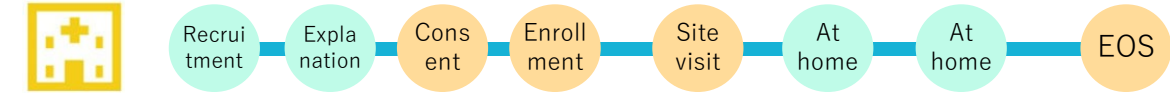
Clinical trials not dependent on visits to trial site (DCT)



Online

- Online medical consultations
- Home visits by healthcare providers
- Digital devices
- Home delivery (drugs, materials)

Clinical trials not dependent on visits to trial site (hybrid DCT)



Online **In-person** **In-person /online**

On-site and remote consultations/evaluations combined as needed

Source: Japan Pharmaceutical Manufacturers Association, *Iryou Kikan heno Raiin ni Izon shinai Rinshou Shiken Shuhou no Dounyuu Oyobi Katsuyou ni Muketa Kentou*

Hallmarks of Clinical Development Driven by Patient Value

- Superior drug candidates lead to patient value -

Thought process behind development decision-making

Medical needs

- Unmet needs, clinical needs
- Patients' true needs (QOL, burden reduction)

Drug's innovative-ness

- Drug discovery concept, modality, technology
- First in class, best in class
- Potential to add patient value

Commercial potential

- Probability of being allowed to charge an adequate price based on scientific evidence
- Marketability and cash flow outlook

Diverse clinical development program

We are building a diverse clinical development program backed by our innovative business model and development models

Approach to rare diseases

We are able to develop drugs that are not feasible for others to put through clinical trials, including drugs for rare diseases, based on a scientific rationale and our sense of responsibility

Diverse Clinical Development Programs

- Committed to flexible clinical development optimized for both patients and the medical profession -

Variety of Study style	・Global/Local ・Double blind/Open ・Adaptive Design	・Umbrella/Basket/Platform ・RWD*1 ・Clinical pharmacology	・Sponsor/Investigator-initiated trials
Multiple Operation model	・Roche/Chugai model ・CCRC*2/CRO*3 ・Full outsource	・Co-development ・Simultaneous development for multi-indication	
A wide range of Modality	・Small molecule ・Mid-size molecule ・Antibody	・Nucleic acid ・Regenerative medicine ・Gene therapy (expected to enter clinical trials)	
Various Disease areas	・Oncology ・Immunology ・Infection	・Ophthalmology ・Alzheimer ・Neuroimmune/muscle/degeneration/Developmental disability	・Hemophilia ・Metabolism ・Rare disease
Talented Members	・Multinational workforce ・Gender mix: roughly 50:50 ・Personnel exchanges/joint HR development with Roche, Genentech, overseas affiliates	・Mid-career hires: roughly 30% of workforce	

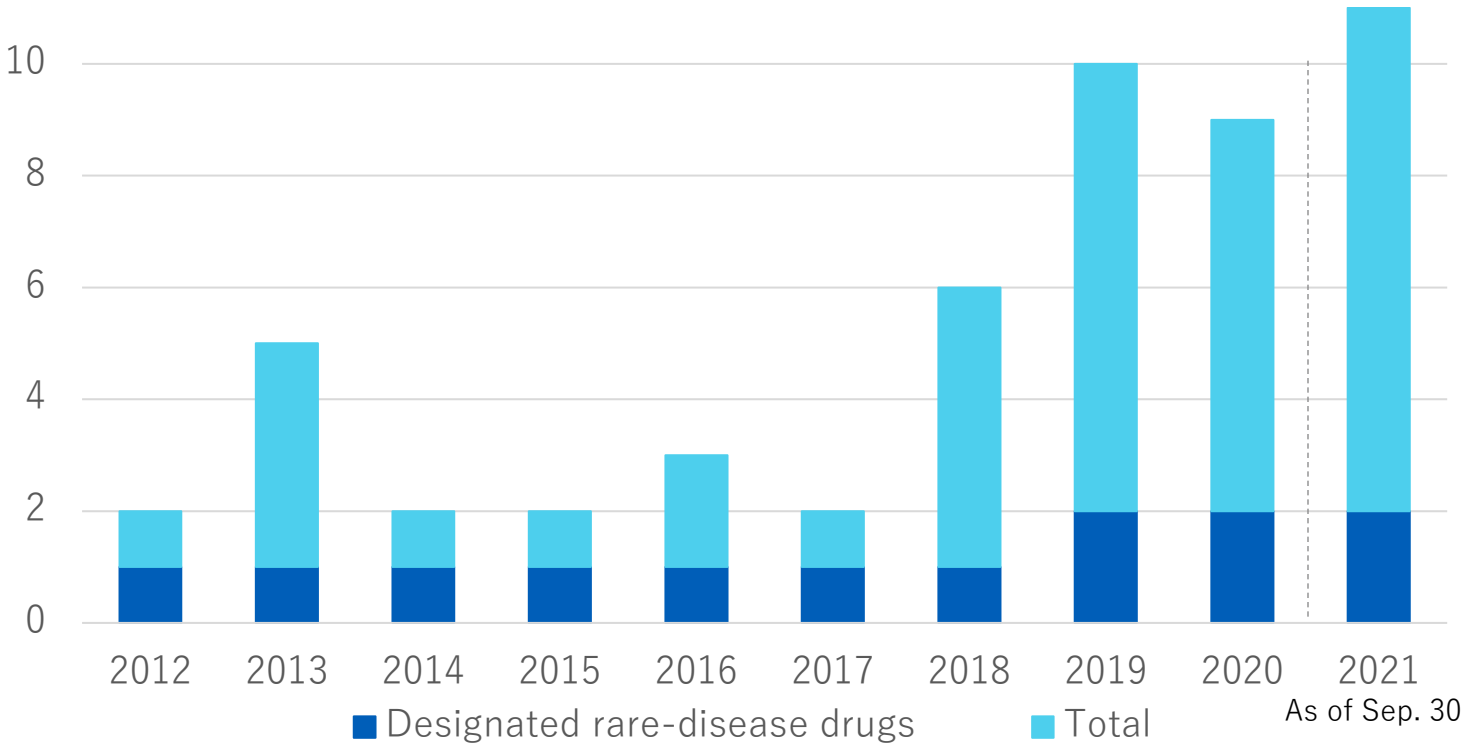
*1 RWD: Real World Data　*2 CCRC: Chugai Clinical Research Center Co., Ltd.　*3 CRO: Contract Research Organization

Approach to Rare Diseases

- Our technology/science-driven orientation impels us to address rare diseases -

- Our products were granted the rare disease designation 13 times over the past 10 years

New products launch and new indications*1 / Designated rare-disease drugs' share thereof*2



*1 Including both FoundationOne® CDx and FoundationOne® Liquid CDx Cancer Genomic Profile
*2 Rare-disease drug designation: A designation awarded by the Minister of Health, Labour and Welfare to drugs that meet certain criteria, including a Japanese patient population of less than 50,000 and a particularly acute medical need for the drug

Rare-disease drugs brought to market over past 10 years

Year approved/ marketed*3	Product name	Indication(s)
2012	Pulmozyme	Cystic fibrosis (improves lung function)
2013	Avastin	Malignant glioma
2014	Alecensa	Metastatic/unresectable *ALK*-positive NSC lung cancer
2015	Zelboraf	Malignant melanoma with *BRAF* V600 gene mutation
2016	Avastin	Cervical cancer
2017	Actemra	Large-vessel vasculitis
2018	Hemlibra	Suppression of bleeding in hemophiliacs without factor VIII inhibitors
2019	Tecentriq	Small-cell lung cancer
2019	Rozlytrek	Locally advanced or metastatic *NTRK* gene fusion-positive solid tumors
2020	Alecensa	*ALK*-positive anaplastic large-cell lymphoma
2020	Enspryng	Neuromyelitis optica and related diseases
2021	Evrysdi	Spinal muscular atrophy
2021	Polivy	Diffuse large B-cell lymphoma

*3 Year in which the drug was approved and first marketed with a rare disease designation. For products not yet on the market when approved, the year is the year the drug was first marketed.

ESG in the Context of Growth Strategy

Global Environmental Initiatives (Pharmaceutical Technology)

Head of Sustainability Dept.

Shigehiro Yamada, Ph.D.

Mid-Term Environmental Goals 2030

- Climate change countermeasures include long-term goal by 2050 -

- We set goals for three material issues: climate change countermeasures, use of renewable/recycled resources and protection of biodiversity.
- We replaced our four previous medium-term goals with 10 new medium-term goals to better address our three material issues from a medium/long-term perspective.
- As a climate change countermeasure, we have set a longer-term goal of reducing our CO_2 emissions to zero by 2050.

Material Issues	Item	KPI (Base year 2019)
Climate change countermeasures (Prevention of global warming)	**Scope 1+2*1 CO_2 emissions**	40% reduction by 2025　60–75% reduction by 2030　Zero emissions by 2050
	Scope 1+2*1 energy consumption	5% reduction*2 by 2025　15% reduction*2 by 2030
	Sustainable electricity ratio	100% by 2025
	Fuel consumption by MR vehicles	35% reduction by 2025　75% reduction by 2030
	Halogenated hydrocarbons (Base year 2020)	25% reduction by 2025　100% reduction by 2030
Use of renewable/ recycled resources (Resource conservation, waste management)	**Industrial waste reduction**	5% reduction*2 by 2025　10% reduction*2 by 2030
	Plastic waste reduction	5% reduction*2 by 2025　10% reduction*2 by 2030
	Water resource conservation (Water withdrawal)	15% reduction*2 by 2030
Protection of biodiversity (Reduction of environmental load)	**Chemical substance management (SVHCs*3)**	After 2021, manufacturing processes without using SVHC-listed chemicals are established for all Chugai original candidate molecules by commercial productions.
	Hazardous waste reduction	5% reduction*2 by 2025　10% reduction*2 by 2030

*1 Scope 1: Direct emissions, Scope 2: Indirect emissions from the generation of purchased energy　*2 Per total floor area (Excluding leased properties)　*3 Substances of Very High Concern

Material Issues Being Addressed in Pursuit of Mid-Term Environmental Goals

- Climate change countermeasures in particular involve technology, investment and operations -

Climate change countermeasures

Reduce CO_2 emissions and energy consumption

- Reducing CO_2 emissions from research/production facilities, which account for a vast majority of Chugai's emissions, is a priority (and also crucial to achieving Roche Group's targets)
- We must update facilities/equipment and improve energy efficiency
- We will source and secure stable supplies of sustainable electricity
- We will challenge to reduce Scope 1 emissions with technology (mitigate impacts on operations, investment, technology)

Discontinue use of halogenated hydrocarbons (HHCs)

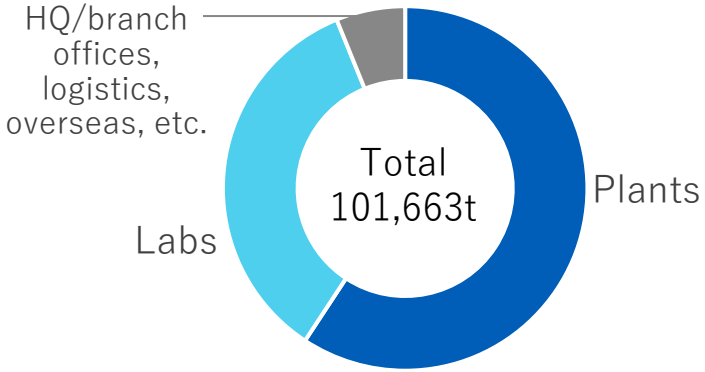
- Need to test/identify alternative technologies
- Impact of natural refrigerants' adoption on energy efficiency and water consumption
- Fixes for equipment for which no alternative technologies exist yet

Use of renewable/ recycled resources

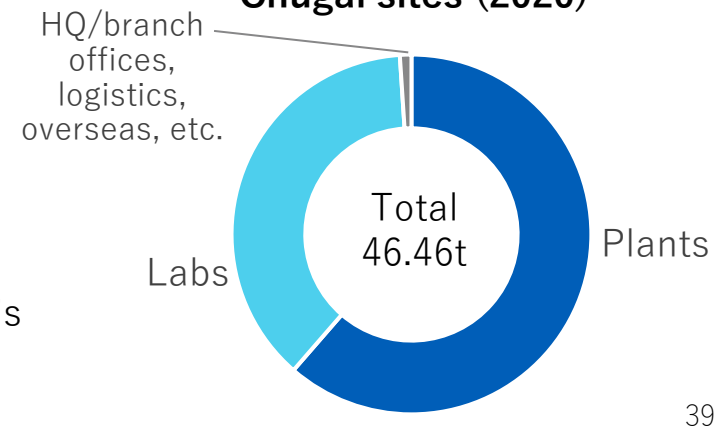
Protection of biodiversity

- We will promote more agile and effective use of resources, placing priority on realizing a circular economy
- We will work on water management and water risk assessment in connection with business activities
- We must step up initiatives to reduce toxic chemical use on ongoing basis
- We must set plans in coordination with local communities

Breakdown of CO_2 emissions (2020)

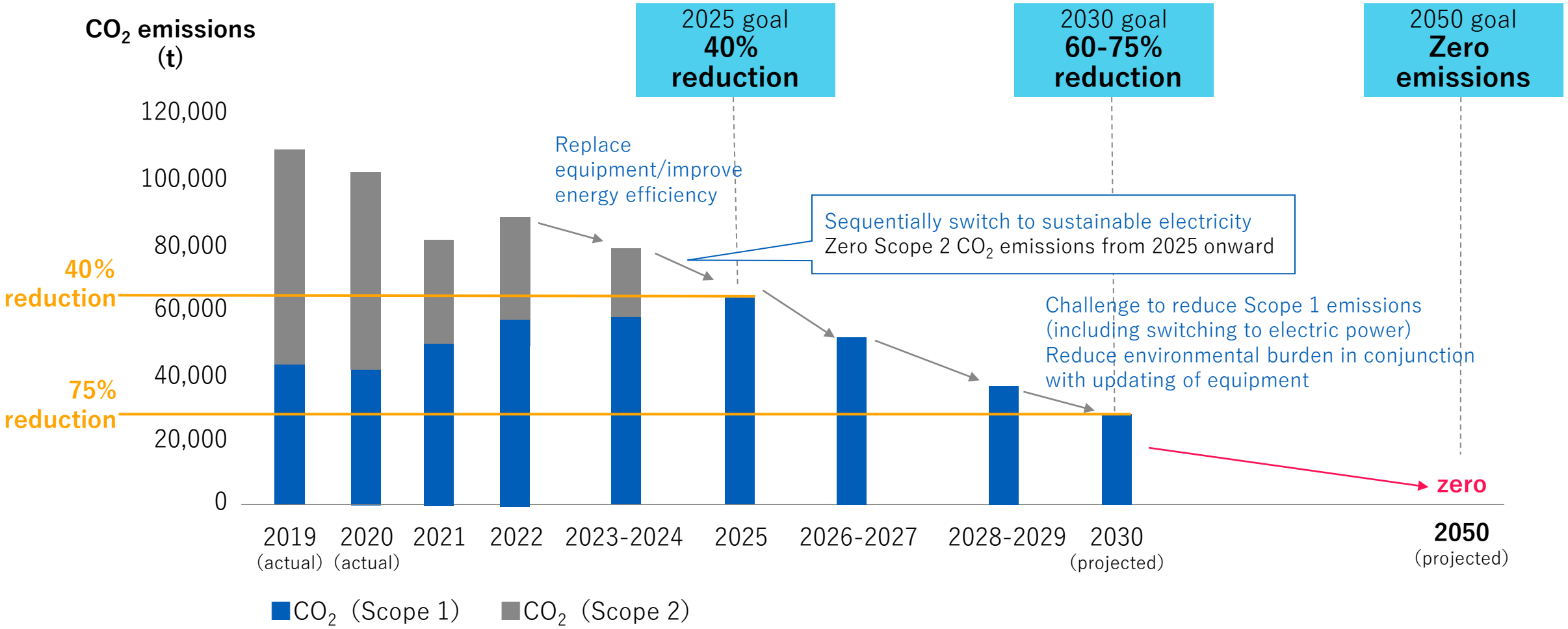


Breakdown of HHCs at Chugai sites (2020)



CO_2 Emission Reduction Roadmap (Company-wide)

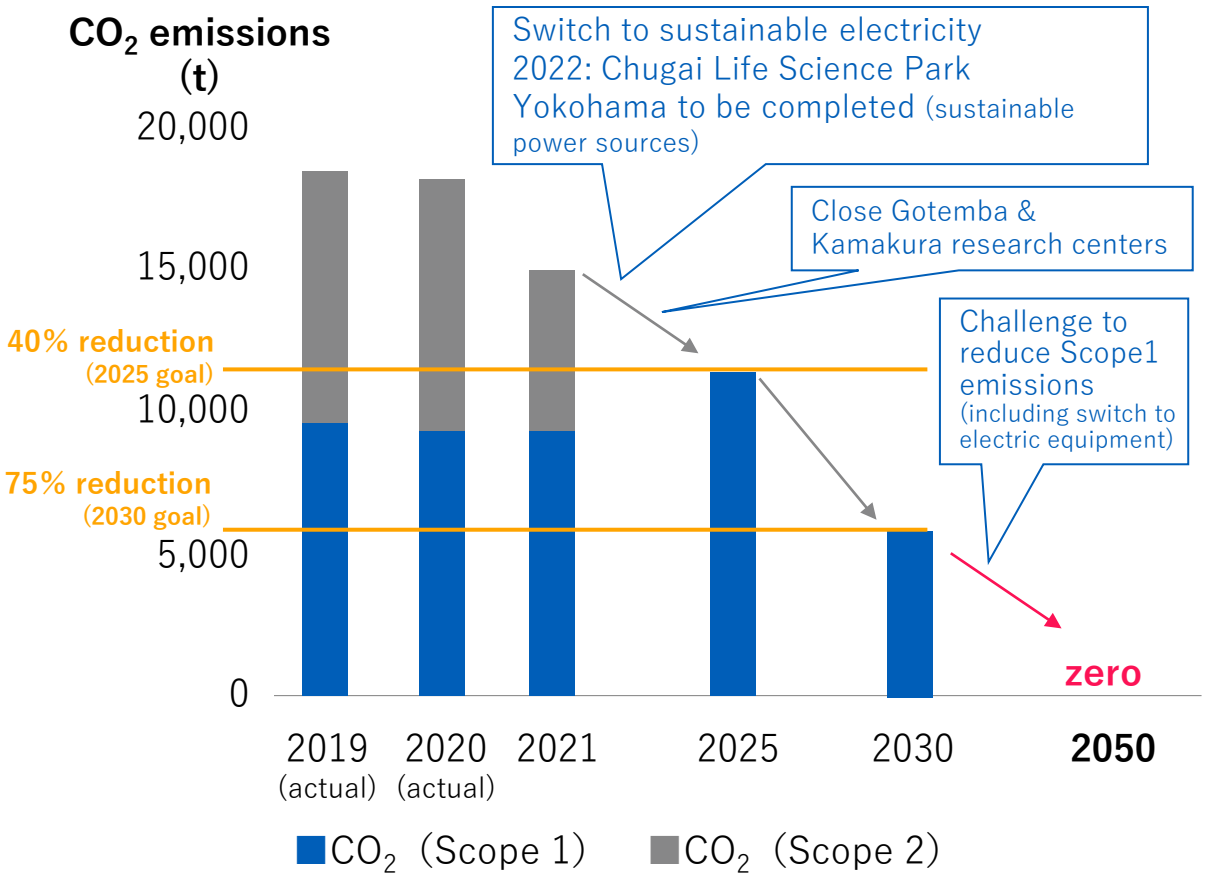
- Aiming to switch to 100% sustainable electricity by 2025 in process of achieving goals -



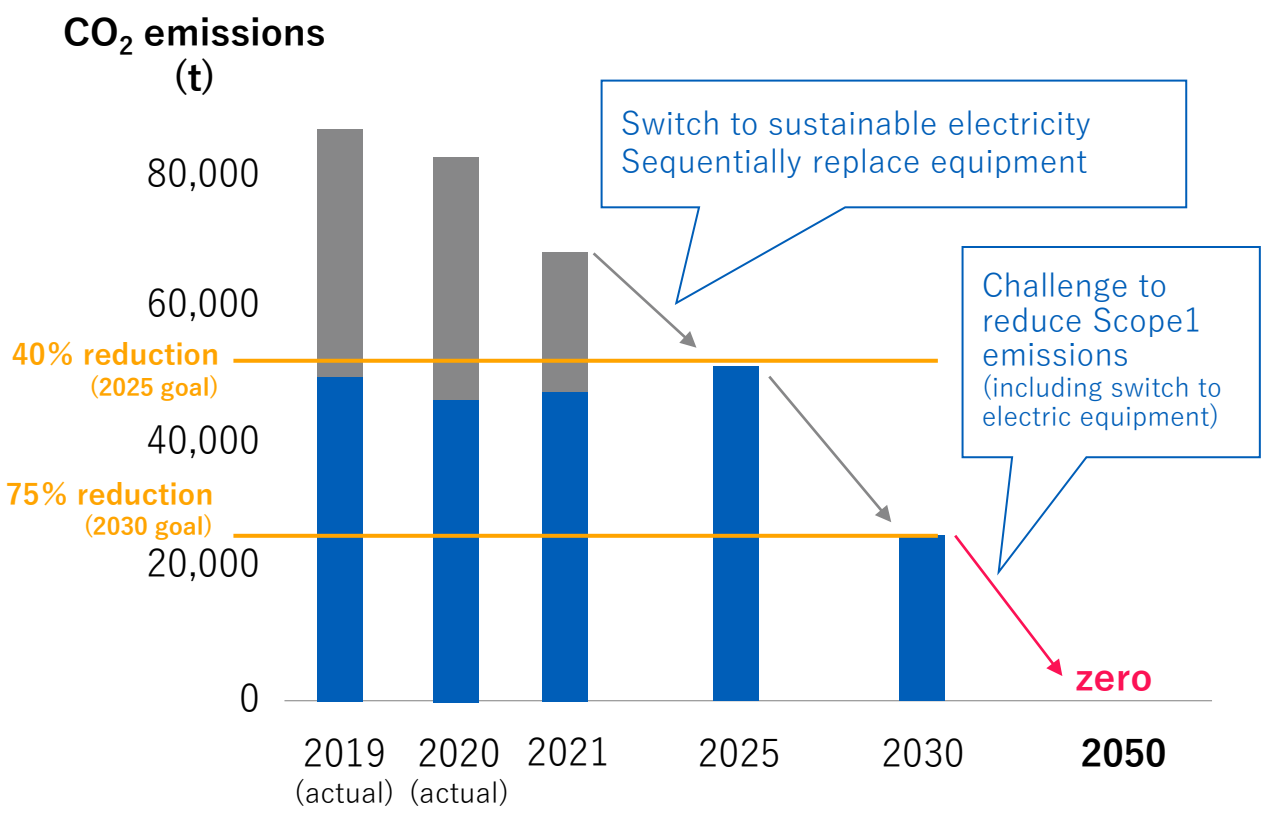
CO_2 Emission Reduction Roadmap (Drug Discovery/Manufacturing)

- Aiming to switch to 100% sustainable electricity by 2025 in process of achieving goals -

Drug discovery (research labs)



Manufacturing (Utsunomiya/Fujieda/Ukima plants in total)



Manufacturing: Priority Climate Change Countermeasures

- Aiming to both upgrade drug manufacturing functions and achieve 2030 environmental goals -

We must plan and take action to implement climate change countermeasures while also executing RED (research and early development) shift, ensuring supply stability and improving quality

Mid-Term Environmental Goals 2030 (climate change countermeasures)	Action steps	
Scope 1+2 CO_2 emissions **Scope 1+2 energy consumption**	・Build new facilities, update equipment, improve processes ・Reduce energy consumption through drastic improvement in energy efficiency ・Identify next-generation energy source(s) to replace natural gas	・Reduce Scope 1 emissions ・Expand use of single-use plastic bioreactors ・Optimize HVAC/lighting through energy management
Sustainable electricity ratio	・Stably source sustainable electricity	・Sequentially switch to sustainable electricity ・Explore captive power generation (solar panels)
Halogenated hydrocarbon (HHC) usage	・Update production/HVAC equipment in conjunction with new construction/replacement of equipment ・Figure out what to do with machinery for which HHC-free technology has yet to be developed	・Install equipment that uses natural refrigerants ・Test new technologies

Manufacturing: Initiatives at Fujieda Plant

- New building will be equipped with advanced EHS technologies and produce APIs for small and mid-size molecule drugs that will drive future growth -

New building (FJ3) for manufacturing APIs for small/mid-size molecule drugs

- Completion of construction: Oct. 2024
- Start of operation: Mar. 2025
- Total investment: ¥55.5 billion

We are building an integrated in-house supply chain in FJ3, a new building that will produce active pharmaceutical ingredients (APIs) from late-stage clinical development through initial commercial production. In addition to producing high potency compounds, FJ3 will be equipped with advanced environmental, health and safety (EHS) technologies.

Production functions	● FJ3 will be equipped with advanced containment technologies to enable production of high potency compounds ● Production lines will be largely automated to boost productivity and reduce manpower requirements
Environ-ment	● HHC-free design by virtue of natural refrigerant use ● Will reduce energy consumption and CO_2 emissions through, e.g., waste heat recovery ● Will reduce waste through recycling of organic solvents/catalysts to help realize circular economy
Safety	● Safe design thoroughly prepared for explosion/fires ● Earthquake-resistant by virtue of seismic isolation structure

FJ2 is equipped with production lines and an HVAC system that use natural refrigerants, not HHCs
(photo: refrigeration system that uses natural refrigerant)

Manufacturing: Initiatives at Ukima Plant

- Initiative to manufacture faster and more efficiently without using HHCs, burning natural gas or emitting CO_2 -

CHUGAI
Roche Roche Group

Biologic API manufacturing building (UK4)

UK4, where biologic APIs for early-stage clinical trials will be produced, will pursue expeditious, flexible and sustainable manufacturing as an HHC-free, all-electric facility with no CO_2 emissions

HHC-free

- Will use natural refrigerants instead of HHCs

Gas-free

- Everything, including production processes, will be electric-powered (zero Scope 1 emissions) by virtue of UK4's energy efficiency

CO_2-free

- Single-use plastic bioreactors will be heavily used (expanded scope of application)
- Membrane water treatment system will contribute to energy efficiency
- HVAC/lighting will be optimized using HVAC mode-switching control, high-efficiency motors and motion sensors
- Non-GMP areas will be powered with on-site renewable energy

・Completion of construction : Sep. 2023
・Start of operation : Jan. 2024
・Total investment: ¥12.1 billion

How single-use plastic bioreactors reduce environmental burden

・Single-use systems obviate the need for, e.g., tank cleaning and steam sterilization, thereby reducing water usage, power consumption and, in turn, CO_2 emissions
・They therefore impose less overall environmental burden than conventional stainless-steel bioreactors
・Measurement instruments to be installed in UK4 will monitor and analyze environmental-burden data

[Issues to be addressed]
UK4 is expected to generate more plastic waste than other manufacturing sites. It will be important to figure out how to recycle waste such as used plastic bags and packaging materials.

Appendix

Advanced API Supply Capacity

- Building production capacity to stably supply APIs from early clinical development through commercial production -

CHUGAI
Roche Roche Group

Small/ mid-size molecule

Phase 1～Phase 2 | Phase 3～ initial commercial production

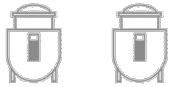
Scheduled to commence production in Dec. 2022

Scheduled to commence production in Mar. 2025

Biologics

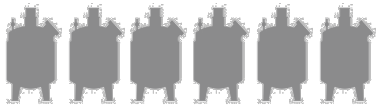
Phase 1 | Phase 1～Phase 2 | Phase 3～initial commercial production

Scheduled to commence production in Jan. 2024



2,000 L x 2

2,000 L x 4
(available for commercial production also)



6,000 L x 6

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INNOVATION BEYOND IMAGINATION