Corporate responsibility

We focus our corporate responsibility work in two key areas: expanding access to healthcare and doing business responsibly. This combination of responsible business and making our medicines accessible is directly linked to our company mission, vision and strategy. We put access to healthcare at the heart of our business strategy, looking for new ways to deliver medicines to as many people as possible.

Expanding access

52 m
Patients reached through access programs

120 000
The number of Novartis Access treatments delivered to Kenya, Lebanon and Ethiopia since launch, each providing a one-month supply of medicine

2/4
Novartis leads two of the four most advanced malaria development programs underway worldwide: KAF156 and KAE609

Doing business responsibly

120
Pilots ongoing or completed to find new and improved ways to engage with healthcare professionals

9 800
Doctors and other participants globally received access to webcasts of industry meetings in 2016, part of our efforts to do business differently

10 000 tns
Net reduction in CO_2 emissions

Mountaha and her 4-year-old daughter Mona are among thousands of displaced people who have settled in Lebanon, where Novartis is working with the Red Cross to support treatment for chronic diseases among refugees.

Corporate responsibility strategy and governance

We use our expertise and skills in two key areas, which are the focus of our corporate responsibility (CR) efforts: expanding access to healthcare and doing business responsibly. This combination of responsible business and making medicines accessible is an important element supporting our company mission, vision and strategy.

To help us achieve our goal of finding new ways to deliver breakthrough treatments to as many people as possible, our access efforts include an array of approaches such as innovative business models, equitable commercial models, zero-profit initiatives, patient assistance programs and strategic philanthropy.

Moreover, to help us become a trusted leader in changing the practice of medicine, we are taking steps to ensure our standards align with society's increasingly high expectations for ethical behavior.

Corporate responsibility is embedded throughout our company. The Head of Corporate Responsibility reports directly to the CEO of Novartis, and our CR efforts are overseen by the Governance, Nomination and Corporate Responsibilities Committee of the Novartis Board of Directors. This commitment from senior management and the Board helps us make the strategic decisions necessary to successfully integrate CR into our business. The engagement and dedication of all our associates are essential to bring CR initiatives to life.

Taking action on what matters most

Our activities and how we carry them out have an impact beyond our business performance. In late 2016, we kicked off our second full CR materiality assessment to help us understand the CR issues that matter to key internal and external stakeholders, as well as stakeholders' needs and expectations. We began conducting interviews – aiming to reach approximately 400 individuals worldwide – including executives across our company; customers; academics; and representatives of patient organizations, nongovernmental organizations, health institutions, and other groups considered important to the industry and our business.

We will use the findings, which will be available in 2017, to guide our strategy, track issues of concern, inform and prioritize our CR programs, establish meaningful metrics against which to measure our CR performance, and further integrate CR into our standard business processes. This assessment follows the first CR materiality analysis from 2013, which was refreshed in 2015.

In late 2016, we kicked off our second full CR materiality assessment to help us further integrate CR topics that matter into our standard business processes

Corporate responsibility
continued

Novartis contributes to achieving the UN Sustainable Development Goals

The United Nations Sustainable Development Goals urge countries to "leave no one behind." The third development goal specifically focuses on ensuring healthy lives and promoting well-being for all people of all ages, while many others such as goal 1 (no poverty), goal 6 (clean water and sanitation), and goal 10 (reduced inequalities) are inextricably linked to health, either directly or indirectly.

As a leading healthcare company, ensuring good health and well-being (goal 3) is at the core of our business and is aligned with our mission to improve and extend people's lives. Through our business operations and ongoing activities, we make essential contributions to goals 8, 9, 13 and 17.

Ensuring good health and well-being is aligned with our mission.

3 GOOD HEALTH AND WELL-BEING

Our mission is to improve and extend people's lives. We pursue a combination of approaches to improve access to our medicines for underserved populations. We also work to improve disease diagnosis and management through disease awareness, training and education programs.

Through our business operations and ongoing activities, we make essential contributions to goals 8, 9 and 13.

8 DECENT WORK AND ECONOMIC GROWTH

Novartis employs 123 000 people worldwide. Our products are available in about 155 countries, and they reached nearly 1 billion people in 2016. We are committed to providing decent employment and promoting a diverse and inclusive working environment.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Innovation is at the core of what we do. We use science-based innovation to discover and develop breakthrough treatments, and we pioneer sustainable business models to deliver them to as many people as possible. Our capability-building efforts focus on patient care, research and development, and business skills, aiming to improve health outcomes and strengthen healthcare systems.

13 CLIMATE ACTION

Climate change threatens development and disproportionately burdens the poorest and most vulnerable, while posing clear health risks. We strive to reduce our carbon emissions and minimize our overall environmental footprint.

Partnerships are at the heart of everything we do.

17 PARTNERSHIPS FOR THE GOALS

Novartis seeks effective partnerships to deliver treatments and quality care to as many people as possible. We partner with governments and the public sector, nongovernmental organizations, local communities and health workers, and research and academic institutes.

Expanding access to healthcare

While significant progress has been made in tackling some of the world's greatest healthcare challenges, billions of people still lack adequate access to medicines. We are working on ways to reimagine access to healthcare through programs that help patients worldwide get the medicines they need, when they need them, at prices they can afford.

Pioneering innovative social business models

In late 2016, we marked the one-year anniversary of the launch of Novartis Access, our portfolio of medicines to fight key chronic diseases. This portfolio includes 15 on- and off-patent medicines addressing cardiovascular diseases, type 2 diabetes, breast cancer and respiratory illnesses. It is offered to governments and public-sector customers in low- and lower-middle-income countries at a price of USD 1 per treatment per month.

The first treatments were delivered to Kenya in February and distributed by our local partner, Mission for Essential Drugs and Supplies (MEDS). Kenya received a total of four shipments in 2016. In total, more than 120 000 Novartis Access treatments were delivered to Kenya, Lebanon and Ethiopia, each providing a one-month supply of medicine. In September, we signed a memorandum of understanding for the implementation of Novartis Access in Rwanda, and we expect the first product delivery in early 2017. We also signed a broad memorandum of understanding with the government of Vietnam, which also covers noncommunicable disease interventions such as Novartis Access.

30 Countries are targeted for the rollout of Novartis Access in the coming years

We plan to roll out Novartis Access in 30 countries in the coming years based on government and stakeholder demand. The Novartis Access team is currently in talks with governments and local stakeholders in more than 10 priority countries in sub-Saharan Africa, Southeast Asia, Central America, and Central and Eastern Europe.

Additionally, Novartis Access filed 370 submissions for marketing authorization with health authorities in 21 countries. As we are required to register each Novartis Access portfolio product in all relevant formulations and dosage forms, we have taken this step proactively to facilitate the swift rollout of the program.

LOCAL PARTNERSHIPS CRITICAL TO SUCCESS

Our experience thus far shows that most healthcare systems in lower-income countries are geared toward tackling infectious diseases and are ill-equipped to address the needs of patients with chronic illnesses. This cannot be solved by one organization alone, so we partner with organizations that can contribute their skills and capabilities. Our distribution partners include MEDS and the Kenya Red Cross. We are also working with Management Sciences for Health to assess the supply chains in public and faith-based healthcare facilities in Kenya and to identify risks that may be detrimental to product integrity. In addition, we are teaming up with the Christian Health Association of Kenya, the Kenya Conference of Catholic Bishops, and the Kenya Red Cross to build capacity among healthcare workers to diagnose and manage chronic diseases in local facilities across the country.

HELPING REFUGEES IN LEBANON

In March, the International Committee of the Red Cross and Novartis Access launched a pilot to improve access to treatment for Syrian refugees in Lebanon – as well as for underserved Lebanese and Palestinian patients – suffering from type 2 diabetes and high blood pressure. Together, these two diseases account for more than 50% of deaths in Lebanon.

EXPANDING THE HEALTHY FAMILY PROGRAMS

Healthy Family is an innovative business model that aims to reach more patients in rural areas in the developing world. In 2016, it continued its expansion to reach more than 7.7 million people through health education sessions in India, Kenya, Vietnam and Indonesia. Nearly 610 000 patients attended specific health camps. Healthy Family is profitable in India and on track to break even in Kenya in 2017.

Corporate responsibility
continued

To improve the quality and impact of the Healthy Family activities, we reassessed and adjusted, where relevant, various program parameters. Specifically, we adjusted the disease area focus, simplified the referral process, capped the number and size of health camps to increase the quality and length of the consultations, and, in some cases, initiated agreements with new partners. As a result, the total number of patients reached in 2016 was smaller than in previous years.

Equitable commercial models in lower-income countries

Our access strategy framework was approved by the Access to Medicine Committee in 2015. This defines a set of tools to develop equitable pricing strategies for lower-income countries, according to the purchasing power of patients and payors. These strategies are systematically applied to key innovative pharmaceutical products that address the disease priorities in countries. The goal is to maximize patient reach through sustainable commercial models, while minimizing the lag time between introduction in higher- and lower-income countries.

We are tracking the implementation of these efforts through a set of indicators that measure the number of patients with access to our products, as well as the price that patients actually pay for them. As affordability is also impacted by factors outside of our control – including markups, taxes, tariffs, etc. – our local teams use this data to engage with distribution partners in an effort to reduce markups on Novartis products before they reach patients.

Sandoz: generating new ideas to make access happen

Our generics division, Sandoz, combines its broad portfolio of more than 1 000 off-patent medicines, covering all major therapeutic areas, with CR programs to improve access, medical information and medical capacity building.

In September, Sandoz launched the Sandoz HACk, short for Healthcare Access Challenge. This competition aimed to generate novel solutions to key healthcare access challenges in local communities. Open to 18- to 35-year-olds from around the world, the Sandoz HACk received 150 submissions, from which six finalist entries were selected. After further refining ideas on the online OpenIDEO platform, three winners will be chosen in the first half of 2017. They will receive seed funding and support from mentors to help bring their ideas to life.

In November, Sandoz announced a new collaboration to increase access to medicines by donating up to USD 10 million of products annually to Americares – a health-focused relief and development organization that responds to people affected by poverty or disaster with life-changing health programs, medicine and medical supplies. The initial donation will include more than 25 Sandoz products to treat infections; cardiovascular, eye and skin conditions; and musculoskeletal pain.

In December, Sandoz signed a sub-licensing agreement with the Medicines Patent Pool to help produce much-needed hepatitis C treatments for developing countries. Specifically, Sandoz will manufacture daclatasvir, a new direct-acting antiviral that – when used in combination with other treatments – is proven to cure multiple genotypes of the hepatitis C virus.

Patient assistance programs

In 2016, our worldwide patient assistance programs helped more than 130 000 people access medicines they could not afford due to financial hardship, lack of insurance, or inadequate reimbursement. One of our key programs is Novartis Oncology Access, or NOA. NOA is designed to improve access in countries that have challenging healthcare environments or very limited healthcare reimbursement systems. Today, NOA offers assistance to emerging nations in Asia, the Middle East, Central and Eastern Europe, Africa and Latin America. In addition to *Glivec*, NOA programs include patient access to *Tasigna* and *Exjade*. NOA and the *Glivec* International Patient Assistance Program (GIPAP) combined reached more than 80 000 patients around the world in 2016.

Given changes in the healthcare environment since GIPAP was launched 14 years ago, starting in 2017, our longtime partner The Max Foundation will assume full responsibility for development and management of the program. Novartis Oncology will donate *Glivec* to The Max Foundation to supply patients currently eligible for GIPAP, and provide funding to The Max Foundation to support program operations.

Novartis access approaches: key performance indicators 2016

There is no one-size-fits-all solution for access to healthcare. We continue to pursue a combination of approaches – innovative business models that provide tailored and scalable solutions, equitable commercial models, high-quality generics, patient assistance programs, zero-profit models and drug donations, strategic philanthropy and emergency relief – to reach underserved patients.

Social business models

	Patients reached (thousands)		FTEs[1]		People reached (thousands)[2]	
	2016	2015	**2016**	2015	**2016**	2015
Novartis Access	8.4[3]	3.3[3]	14	10		
Healthy Family (in India, Kenya, Vietnam and Indonesia)	609.6[4]	981.2	495	519	7 756.4	7 621.4
Total	**618.0**	**984.5**	**509**	**529**	**7 756.4**	**7 621.4**

Patient assistance programs

	Patients reached (thousands)		Value USD (millions)[5]	
	2016	2015	**2016**	2015
Novartis Patient Assistance Foundation Inc. (US)	45.4	42.6	1 115.0[6]	707.0
Oncology/hematology LMIC patient assistance	83.3	80.6	1 579.1	1 523.5
Alcon US patient assistance	5.8[7]	7.8	9.7[7]	13.2
Total	**134.5**	**131.0**	**2 703.8**	**2 243.7**

Zero-profit model

	Patients reached (thousands)		Value USD (millions)[8]	
	2016	2015	**2016**	2015
Malaria/*Coartem*	49 757.9[9]	64 097.7	80.7	111.5
Total	**49 757.9**	**64 097.7**	**80.7**	**111.5**

Donations

	Patients reached (thousands)		Value USD (millions)[5]	
	2016	2015	**2016**	2015
Alcon medical missions[10]	484.0	393.8	73.0	43.0
Leprosy (WHO)	290.0	304.5	4.4	5.6
Fascioliasis/*Egaten*[11]	276.2[12]	13.7	<1	<1
Medicine donations (emergency relief)			1.8	1.1
Total	**1 050.2**	**712.0**	**79.2**	**49.7**

Health systems strengthening

	Value USD (millions)[13]		FTEs[1]		People reached (thousands)[2]	
	2016	2015	**2016**	2015	**2016**	2015
Novartis Foundation	14.8	12.0	14	10	8 908.6[14]	4 456.0
Novartis research capacity-building programs	3.5	5.5	6	6	1.0	1.0
Total	**18.3**	**17.5**	**20**	**16**	**8 909.6**	**4 457.0**

	Patients reached (thousands)		Value USD (millions)[5 8 13]		FTEs[1]		People reached (thousands)[2]	
	2016	2015	**2016**	2015	**2016**	2015	**2016**	2015
Grand total	**51 560.6**	**65 925.2**	**2 882.0**	**2 422.4**	**529**	**545**	**16 666.0**	**12 078.4**

[1] Full-time equivalent positions and contractors
[2] Via training and service delivery and through health awareness activities
[3] The patient number was calculated based on treatments delivered and the following elements: daily treatment doses, treatment duration, treatment adherence and potential treatment overlap (as it is common for chronic patients to take several drugs). The treatment adherence and treatment overlap factors are based on assumptions from developed markets and will be revisited when we gain additional insights from Novartis Access rollout countries.
[4] Several strategic measures were implemented to improve the quality and impact of the program (capping number and size of health camps, etc).
[5] Wholesale acquisition cost (WAC) plus logistics costs for some programs
[6] Integration of Alcon brands in the program as of August 2016 and a full-year impact of GSK oncology medicines
[7] Data reflects January to July 2016; as of August 2016, the program transitioned to the Novartis Patient Assistance Foundation Inc. (US).
[8] *Coartem* was provided without profit for public sector use and to donor-funded programs in the private sector. The value of these shipments is calculated based on the average ex-factory price of non-donor-funded *Coartem* to private-sector purchasers in developing countries, minus payments received from the public sector and donor-funded customers in the private sector.
[9] Increased availability of generic options on the market
[10] Retail value for surgical products
[11] Manufacturing, testing and FTE costs
[12] Some 2015 shipments shifted to 2016.
[13] Operating costs
[14] Programs at scale report the catchment of a population in the area where a program has been implemented. Includes expanded nationwide catchment area of the population in 25 districts of Ghana

Corporate responsibility
continued

Zero-profit models and product donations

The Novartis Malaria Initiative recently achieved another treatment milestone: Since 2001, the initiative has delivered, without profit, more than 800 million antimalarial treatments – including more than 300 million dispersible pediatric treatments – mostly to the public sector of malaria-endemic countries. In 2016, our malaria treatments delivered at zero profit reached approximately 50 million patients.

In 2016, Novartis celebrated a 30-year commitment to leprosy elimination. In total, since 2000, we have donated multidrug therapy to 6 million leprosy patients worldwide. The Novartis Foundation continues this legacy by consistently devising novel strategies to fully interrupt the transmission of the disease. At the 19th International Leprosy Congress in September, the foundation presented emerging evidence from the leprosy post-exposure prophylaxis (LPEP) program. LPEP evaluates the effect of providing preventative medicines to close contacts of newly diagnosed patients – such as family members or friends – to decrease the risk of transmission. Partway through the study, LPEP has already shown that its strategy of contact tracing and preventative therapy is feasible and efficient, meaning it could be integrated into routine practice in endemic countries in the future.

In 2016, Novartis celebrated a 30-year commitment to leprosy elimination. In total, since 2000, we have donated multidrug therapy to 6 million leprosy patients worldwide

Alcon: driving access to state-of-the-art surgical eye care

For years, Alcon has partnered with Orbis, which operates a Flying Eye Hospital that provides hands-on training to local eye care specialists and treats patients in some of the world's most underserved areas. Approximately 200 patients are treated during a typical Orbis program. In 2016, Orbis launched its third-generation Flying Eye Hospital, equipped with the latest technology. Alcon supported the aircraft with equipment, products, volunteers and financial assistance. The new Flying Eye Hospital completed its maiden program in Shenyang, China, in September. During the three-week visit, the plane's medical volunteers treated 124 patients and provided hands-on surgical training to 18 local doctors.

200 The number of patients treated during a typical Orbis Flying Eye Hospital program

Effective partnerships to strengthen healthcare systems

While increased availability of high-quality, affordable medicines is important, a holistic system approach is needed to improve quality of care. Strong health services and trained health workers are also critical. The Novartis Foundation is pioneering solutions beyond treatment by testing and validating innovative healthcare models that have a transformational impact on the health of the poorest populations.

In 2016, the Novartis Foundation, together with global nonprofit PATH, local partners and government agencies, launched an innovative blood pressure management program in Vietnam called Communities for Healthy Hearts. It is designed to improve the health of adults who have high blood pressure and are living in low-income households in four districts in Ho Chi Minh City, Vietnam's largest urban area. The program strengthens treatment and referral services, partners with social enterprises to improve blood pressure screening, and leverages technology to help patients manage their disease.

In a village near San Lorenzo, Guatemala, field worker Eduardo Canuz and nurse Evelin Alvarado Fuentes discuss the hazards of wood-burning stoves with Tomasa Carrete and her daughter Veronica Bulux.

Science-based innovation to address the needs of underserved populations

Bacteria, viruses and other micro-organisms continue to wreak havoc on human health, despite major medical advances. Infectious diseases remain the leading cause of death in children and adolescents, and one of the leading causes of death in adults. We are continuing to research potential therapies for these neglected diseases, which can be devastating, especially in developing countries.

In August, we reported on a new target for three neglected diseases: African sleeping sickness, leishmaniasis and Chagas disease. Working in lab models, our researchers at the Genomics Institute of the Novartis Research Foundation demonstrated that it may be possible to treat all three diseases with a single class of compound that blocks cellular machinery known as the proteasome.

Novartis leads two of the four most advanced malaria development programs underway worldwide. Malaria still kills approximately 430 000 people each year, most of them children under 5 years old. In September, the results of a proof-of-concept study for one compound, KAF156, were published, and further development is ongoing. The second compound, KAE609, continues to be evaluated for the role it could play in the battle against the disease. Read more about our antimalarial research and development (R&D) efforts on page 51.

In October, we announced that the Novartis Institute for Tropical Diseases (NITD) will move its operations and research programs from Singapore to Emeryville, California in the US, where it will be co-located with the infectious diseases research team of the Novartis Institutes for BioMedical Research (NIBR). This move will strengthen NITD for the future by enabling closer collaboration with the NIBR infectious diseases research team and the San Francisco Bay Area life sciences community. NITD will remain an institute within the global research network of NIBR and continue to focus on the discovery of new medicines to combat malaria and other tropical diseases. The transition is expected to take place over the next 15 months.

Adaptive R&D is the modification of an existing drug to improve therapeutic efficacy, safety, and access to medicine, and – most importantly – to generate a positive health outcome. Most often, this work is done with a specific focus on poor and vulnerable patient groups. Our Established Medicines franchise manages a product portfolio of more than 90 mature brands spanning 11 therapeutic areas. It also systematically evaluates its portfolio and executes relevant adaptive R&D projects. In addition, our Center of Excellence for Emerging Markets collaborates closely with the global program teams across the Innovative Medicines Division to ensure that adaptive R&D considerations, especially formulations for specific age groups or geographies, are firmly embedded in the development plans for our new products.

Corporate responsibility
continued

Doing business responsibly

We recognize that achieving our business goals requires that we operate with high integrity, transparency and environmental sustainability. We must meet society's increasing expectations in a way that builds and maintains trust.

Continuing to build a culture of integrity

It takes significant effort to truly and deeply embed a culture of integrity in a sustainable way across a large, complex and multinational organization. As a result, we do still uncover lapses. We take allegations of any inappropriate behavior very seriously, actively investigate them, and take appropriate disciplinary action. Associates can report suspected misconduct to the Business Practices Office (BPO) – an independent team that reports to the Group General Counsel.

In 2016, the BPO received a total of 3 595 complaints of alleged misconduct, of which 1 888 were deemed not to be related to misconduct and were delegated for review and action outside the BPO investigative process. The BPO initiated investigations of 1 707 reported cases related to misconduct; 893 were substantiated, including 401 that resulted in dismissals or resignations.

Following recent cases of misconduct, we have further increased our focus on ensuring that lessons learned are shared immediately and transparently throughout the global organization to identify other similar behaviors and enable intelligent risk mitigation. We continue to invest significant efforts to embed a culture of compliance throughout our organization.

Training and guiding associates

All Novartis Group company associates are required to complete integrity and compliance training. In 2016, more than 110 000 employees completed the Code of Conduct course.

Every year since 2012, global communications toolkits have been rolled out to support the launch and updating of policies and guidelines, and to reinforce ethical behavior among associates. These toolkits include a range of awareness-raising and educational materials such as posters, videos, letters to internal stakeholder groups, frequently asked questions and answers, training presentations and case materials.

Additionally, our CEO chaired a webcast on global integrity and compliance to reinforce our commitment to embed responsible business practices across our organization and make leaders accountable. We also developed integrity case studies – inspired by real-life scenarios – for managers to use in discussions with their teams.

Compliance has now become a regular agenda item of leadership meetings across the company. To ensure accountability of local country organizations, our management includes integrity and compliance questions as part of standard business reviews.

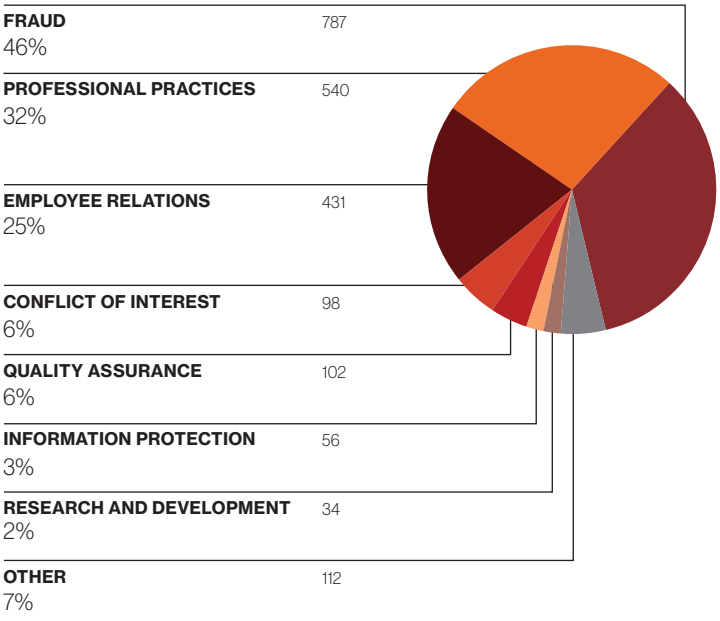
In addition, we continue to further embed our revised Values and Behaviors launched last year in all aspects of employees' lives at Novartis – from recruitment and development to promotions, performance assessments and bonus awards.

Strengthening the Integrity & Compliance function

In May, we introduced a new Chief Ethics and Compliance Officer who continues to report directly to the CEO. The new Chief Ethics and Compliance Officer is also Head of Litigation, reporting to the Group General Counsel of Novartis. By bringing the compliance and legal functions closer together, we can evaluate facts that are uncovered and intended for use in litigation cases to determine if additional compliance actions or policies are warranted. This helps us constantly improve our compliance activities.

Misconduct cases[1] per category

A total of 1 707 cases of misconduct were reported to the BPO, of which 893 were substantiated, including 401 that resulted in dismissals or resignations.



[1] One case can fall under several categories, so the total is greater than 100% and category figures total more than the stated number of cases. Investigation reports are received on an ongoing basis, which potentially leads to a reassessment of the allegation category and related figures.

We also continue to strengthen the Integrity & Compliance (I&C) function, which now has approximately 375 full-time-equivalent employees who are dedicated to integrity and compliance at the local, regional and global levels. Of these employees, 175 were added in the past three years. Additionally, we developed and launched an internal, web-based tool in January 2016 called the I&C Training Academy, which is designed to help I&C professionals further enhance their functional skills and competencies.

Furthermore, we took steps to strengthen integrity and compliance monitoring by hiring regional monitoring teams to perform in-country testing.

Changing how we interact with customers

Companies in the healthcare industry have an important responsibility to educate doctors, nurses and other clinicians about how medicines and devices work. Practices such as sponsoring doctors to attend conferences, inviting clinicians to speak about products, and providing promotional aids have long been used by pharmaceutical companies to deliver information to the medical community about medicines and services in their portfolio.

One of our goals in 2016 was to find better and more inclusive ways to reach a broader cross-section of this community. Moreover, social expectations are rapidly changing, and educational and promotional practices that have been widely used by the industry must be re-evaluated.

We have 120 pilots for finding new and improved ways of engaging with healthcare professionals that are ongoing or completed. This includes employing technology to supplement face-to-face meetings and bring the experience of international congresses to the local level. For the prominent American Society of Clinical Oncology meeting in June, we used our new virtual conference platform *Vivinda* TV to deliver meeting content on-demand to more than 5 000 virtual delegates in 103 countries – a reach five times greater than in the past. And at the European School for Advanced Studies in Ophthalmology, we used *Vivinda* TV to provide almost 1 800 virtual delegates in 75 countries with online access to meeting content. This significantly exceeded the 600 ophthalmologists who would normally attend the meeting in person. Additionally, Novartis partnered with the

Ethics and people key performance indicators [1]

	2016	2015
Full-time equivalent positions / headcount [2]	**118 393 / 122 985**	118 700 / 122 966
Turnover: % voluntary / % overall	**7.4 / 12.2**	7.3 / 13.5
Voluntary turnover of high [3] performers (%)	**5.8**	5.5
Internal hires / external hires (%)	**47.0 / 53.0**	44.8 / 55.2
Women in management: % of management [4] / % of Board of Directors	**42 / 25**	41 / 27
Associate nationalities / associate nationalities in management [4]	**142 / 109**	145 / 109
Annual training hours per employee	**27.8**	27.3
Lost-time injury and illness rate (per 200 000 hours worked) [5]	**0.08**	0.11
Total recordable case rate (per 200 000 hours worked) [5, 6]	**0.29**	0.40
Novartis associates trained and certified on Code of Conduct [7]	**110 774**	110 638
Misconduct cases reported / allegations substantiated [8]	**1 707 / 893**	1 300 / 1 010
Dismissals and resignations related to misconduct [9]	**401**	577
Regulatory inspections without major findings (%)	**98.1**	98.4
Suppliers posing an elevated risk under responsible procurement [10]	**441**	475
Suppliers with active follow-up [10, 11]	**147**	249
Suppliers audited [10]	**76**	100

[1] Continuing operations
[2] Headcount reflects the total number of associates in our payroll systems. Full-time equivalent adjusts headcount for associates working less than 100%. All data as of December 31
[3] We have refined the high-performer definition methodology to reflect the focus on Values and Behaviors, and have restated 2015 data.
[4] Management defined locally
[5] Data include Novartis associates and third-party personnel managed by Novartis associates.
[6] Includes all work-related injury and illness, whether leading to lost time or not
[7] Active Novartis associates with email addresses, trained via e-learning
[8] The number of misconduct cases reported may change as matters may be reassessed in the course of the case lifecycle. The number of substantiated allegations may change due to the fact that investigation reports with assessments are received on an ongoing basis, which potentially leads to a difference in numbers at a later stage. In 2016, the Business Practices Office (BPO) received a total of 3 595 complaints of alleged misconduct, of which 1 888 were deemed not to be related to misconduct and were delegated for review and action outside the BPO investigative process. The BPO initiated investigations of 1 707 reported cases related to misconduct; 893 were substantiated, including 401 that resulted in dismissals or resignations.
[9] The number of dismissals and resignations related to misconduct may change due to the fact that investigation reports are received and then reviewed for remedial actions on an ongoing basis, which potentially leads to a difference in numbers at a later stage.
[10] Includes new suppliers and new products, services or sites from existing suppliers; potential risks include labor or human rights, HSE and animal welfare
[11] Follow-up includes more information requested, audits or on-site assessments.

Corporate responsibility
continued

American Society of Hematology (ASH) to provide 3 000 healthcare professionals with virtual access to their annual congress via the ASH web portal.

Beginning 2017, our company will offer doctors support to attend international medical conferences based on their active participation in the event (i.e., only if they are speakers or presenters of Novartis data, chairs of Novartis-sponsored sessions or faculty for post-congress education). Novartis will also only sponsor speakers to represent the company in clearly defined instances, such as when a new product becomes available, a new indication is added to an existing product, or significant new clinical data is released.

We have 120 pilots for finding new and improved ways of engaging with healthcare professionals that are ongoing or completed

Increasing transparency around payments to customers

As of 2016, companies belonging to the European Federation of Pharmaceutical Industries and Associations (EFPIA), including Novartis, publicly disclose payments and other transfers of value to health professionals and healthcare organizations for prescription pharmaceuticals. Since June, we have made our disclosure reports available on our global website. We will extend this disclosure to include all product segments in EFPIA countries where we have activities – even parts of our business that are not covered by the EFPIA code – and publish them on our global website in 2017.

In addition to the EFPIA code, we comply with similar transparency codes and regulations in the US, Japan and Australia.

Combatting counterfeit medicines

Novartis is continuing to work to tackle the problem of counterfeit drugs.

We established both an Anti-Counterfeiting Steering Committee and an Anti-Counterfeiting Working Group. The steering committee, made up of senior managers from across the company, is tasked with driving the strategic direction of our anti-counterfeiting approach worldwide. The working group develops and delivers the specific operational activities needed to implement the strategy.

Driving environmental sustainability

In late 2015, Novartis launched its Vision 2030 on Environmental Sustainability, which is underpinned by a set of environmental sustainability targets in four areas: energy and climate, water and micropollutants, materials and waste, and environmental sustainability management. Throughout 2016, a cross-divisional team began to select major facility and infrastructure projects and measures necessary to achieve our 2020 goals, based on the savings as determined by our internal carbon price of USD 100/tCO_2e. We are identifying opportunities for contracting renewable wind and solar electricity as priority actions.

At the same time, we found ways to improve our environmental footprint in our day-to-day operations, contributing to a reduction in carbon emissions (Scope 1 and Scope 2) of 10 kilotons in 2016. For instance, at our facility in Grimsby in the UK, we implemented a new wastewater technology that uses microbubbles. This technology was first introduced at our plant in Ringaskiddy, Ireland, in 2015. There, it reduced electricity demand by 160 kilowatts per year and carbon emissions by 600 tons per year, without impacting the performance of the plant.

Ghanaian scientist Edmund Ekuadzi gathers plants used by traditional healers to analyze their medicinal effects.

We found ways to improve our environmental footprint in our day-to-day operations, contributing to a reduction in carbon emissions (Scope 1 and Scope 2) of 10 kilotons in 2016

Maintaining a responsible supply chain

We engage with an extensive network of suppliers worldwide, and their contributions are crucial to our success. Responsible procurement (RP) helps ensure our goods and services are ethically sourced by requiring the companies with which we do business to meet the standards of ethics, business integrity and environmental practice that we expect. Our RP practice is designed to provide a clear view of where potential issues exist or standards may be compromised, with speed and accuracy. It quickly filters out the approximately 95% of suppliers that present little or no ethical risk, enabling us to concentrate our efforts on the small number of suppliers where a significant risk exists or where we can influence change.

In 2016, we conducted a materiality assessment to ensure that our current processes meet the recent heightened external interest, additional scrutiny and new regulations. One of the outcomes was the establishment of a cross-functional steering committee. This committee has the accountability to expand our current RP program into a comprehensive third-party risk framework across Novartis.

In 2017, cross-functional workstreams formed under the steering committee will carry out an action plan to strengthen the policy, execution and monitoring aspects of the program to address additional third-party risks.

Expanding our corporate volunteering program

Novartis has a number of initiatives to engage our associates, helping us to attract and develop talented people, strengthen our company's culture, and support our ability to execute our strategy.

In 2015, we put in place a corporate volunteering platform through which Novartis associates can register a potential corporate responsibility project idea or sign up to become a corporate volunteer. In 2016, the program expanded significantly, launching in several markets, including low- and middle-income countries. The scope of projects in the platform is broad and includes partnerships with global charitable organizations, remote and on-the-ground capability building, one-time and recurring pro bono services, and local efforts to support smaller-scale foundations and institutions.

Environmental sustainability key performance indicators [1, 2]

	2016	2015
Energy use (million gigajoules), on site and purchased	**16.6**	17.2
Water discharge (million m^3)	**16.2**	17.2
Contact water use, excluding cooling water (million m^3)	**14.8**	15.5
Emissions		
Greenhouse gas (GHG) emissions, total Scope 1 and Scope 2 (1 000 t)	**1 352.7**	1 362.1
GHG emissions, Scope 1, combustion and processes on site (1 000 t)	**396.6**	396.8
GHG emissions, Scope 1, vehicles (1 000 t)	**134.7**	138.9
GHG emissions, Scope 2, purchased energy (1 000 t)	**821.4**	826.4
Halogenated volatile organic compounds (t)	**50.7**	66.4
Non-halogenated volatile organic compounds (t)	**480.8**	517.1
Operational waste		
Hazardous waste not recycled (1 000 t)	**60.2**	57.6
Non-hazardous waste not recycled (1 000 t)	**17.9**	20.6

[1] Continuing operations

[2] 2016 environmental sustainability data published in the Annual Report are actual data for the period from January through September, and best estimates for the period from October through December. They will be updated with actual data in the first quarter of 2017. Significant deviations will be reported on our website and restated in next year's Annual Report.

Independent Assurance Report on the Novartis 2016 corporate responsibility reporting

To the Board of Directors of Novartis AG, Basel

We have been engaged to perform assurance procedures to provide limited assurance on the following aspects of the 2016 corporate responsibility (CR) reporting of Novartis AG and its consolidated subsidiaries (Novartis Group) included in the Annual Report 2016.

Scope and subject matter

Our limited assurance engagement focused on the following data and information disclosed in the consolidated CR reporting of Novartis Group for the year ended December 31, 2016:

- The social key performance indicators on page 7, the "Novartis access approaches: key performance indicators 2016" on page 65, the "Misconduct cases per category" on page 68, the "Ethics and people key performance indicators" on page 69 and the "Environmental sustainability key performance indicators" on page 71 (CR indicators)
- Reporting processes and related controls in relation to data aggregation of CR indicators

Criteria

The management reporting processes with respect to the CR reporting and CR indicators were assessed against Novartis Group internal policies and procedures, as set forth in the following:

- Guideline on Corporate Responsibility Management at Novartis and the Code of Conduct
- Procedures by which the data for the CR indicators reporting are gathered, collected and aggregated internally

Inherent limitations

The accuracy and completeness of CR indicators are subject to inherent limitations given their nature and methods for determining, calculating and estimating such data. Our Assurance Report should therefore be read in connection with Novartis Group guidelines, definitions and procedures on CR reporting.

Novartis responsibilities

The Board of Directors of Novartis AG is responsible for both the subject matter and the criteria as well as for selection, preparation and presentation of the information in accordance with the criteria. This responsibility includes the design, implementation and maintenance of related internal control relevant to this reporting process that is free from material whether due to fraud and error.

Our responsibilities

Our responsibility is to form an independent opinion, based on our limited assurance procedures, on whether anything has come to our attention to indicate that the CR indicators are not stated, in all material respects, in accordance with the reporting criteria.

We planned and performed our procedures in accordance with the International Standard on Assurance Engagements (ISAE) 3000 (revised) "Assurance Engagements Other Than Audits or Reviews of Historical Financial Information." This standard requires that we plan and perform the assurance engagement to obtain limited assurance on the identified CR indicators.

A limited assurance engagement under ISAE 3000 (revised) is substantially less in scope than a reasonable assurance engagement in relation to both the risk assessment procedures, including an understanding of internal control, and the procedures performed in response to the assessed risks. Consequently, the nature, timing and extent of procedures for gathering sufficient appropriate evidence are deliberately limited relative to a reasonable assurance engagement and, therefore, less assurance is obtained with a limited assurance engagement than for a reasonable assurance engagement.

Our independence and quality control

We have complied with the independence and other ethical requirements of the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior.

Our firm applies International Standard on Quality Control 1 and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards, and applicable legal and regulatory requirements.

Summary of work performed

Our assurance procedures included the following:
- Reviewing the application of the Novartis Group internal CR reporting guidelines
- Interviewing associates responsible for internal reporting and data collection
- Performing tests on a sample basis of evidence supporting selected CR data concerning completeness, accuracy, adequacy and consistency
- Inspecting relevant documentation on a sample basis
- Reviewing and assessing the management reporting processes for CR reporting and consolidation, and their related controls

We have not carried out any work on data other than outlined in the scope and subject matter section as defined above. We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our assurance conclusions.

Limited assurance conclusion

Based on our work described in this report, nothing has come to our attention that causes us to believe that the data and information outlined in the scope and subject matter section (including the related controls) have not been prepared, in all material aspects, in accordance with Novartis Group internal policies and procedures.

PricewaterhouseCoopers AG

Bruno Rossi

Raphael Rutishauser

Basel, January 24, 2017