



GREEN INNOVATION BOND FRAMEWORK



SECURE CONNECTIONS
FOR A SMARTER WORLD

INTRODUCTION

NXP Semiconductors N.V. (NASDAQ: NXPI) enables secure connections for a smarter world, advancing solutions that make lives easier, better, and safer. As the world leader in secure connectivity solutions for embedded applications, NXP is driving innovation in the automotive, industrial & IoT, mobile, and communication infrastructure markets. Built on more than 60 years of combined experience and expertise, the company has approximately 30,000 employees in more than 30 countries and posted revenue of \$8.88 billion in 2019. Find out more at www.nxp.com.

NXP believes a company's corporate responsibility is to continuously improve through its actions to make a positive impact on society. As a technology company, we want our stakeholders and employees to be motivated and excited to work for a responsible company and to design products that can change the world.

At NXP we also believe that, by building on innovation and providing technologies that directly address societal demands, some of our most exciting times as a company lie ahead. NXP will continue to operate with a focus on corporate responsibility and a duty to good corporate citizenship for the future. We believe the semiconductor industry is poised to take on new challenges, using the latest semiconductor technologies which produce tiny circuits that can perform advanced functions, with relatively low power consumption. Our industry can help address some of the most compelling challenges we face as a society, including issues relating to energy efficiency, mobile populations, national and personal security, and caring for the health of a growing and rapidly-aging world population.

In particular, our industry has the potential to directly address our dependence on fossil fuels and minimize carbon emissions. Semiconductors are already reducing the power consumption of server farms and making consumer appliances operate more efficiently. They are accelerating the deployment of:

- Energy efficiency
- National and personal security
- Renewable energy sources and minimizing carbon emissions
- Caring for the health of a growing and rapidly-aging world population
- Reducing the power consumption of server farms
- Enabling the shift to hybrid and electric vehicles
- Making consumer appliances operate more efficiently
- Accelerating the deployment of energy-saving lighting technologies

It is our collective responsibility, as an industry, to continue this trend of being proactive as we create value for consumers, the environment, and society as a whole.

OUR SUSTAINABILITY AGENDA



SUSTAINABILITY IS OUR RESPONSIBILITY

ENGAGE • PROTECT • RESPECT

Vision	Guiding Principles
Achieve sustainability excellence through innovation and performance, recognized by our stakeholders	 Provide a safe working environment, promote good health and minimize the environmental impact of our activities
Strategy	 Develop and manage products in ways that minimize risk to health and the environment and maximizes value to customers
Provide best-in-class customer experience Anticipate changing societal expectations and set actionable targets Be transparent and add value for all our stakeholders Manage risks and compliance through solid processes and perfect execution Add to a responsible and sustainable society by active collaboration in global CSR initiatives Optimize resources and competencies	 Implement working practices that are safe, secure, and in which every employee is treated with respect and dignity
	 Protect the interest and reputation of our key stakeholders by having an effective business continuity management process
	 Ensure that sustainability is ingrained in our business conduct at all levels and the way we interact with society at large

BASIS OF THIS GREEN INNOVATION BOND FRAMEWORK

In line with NXP's approach to ethics and sustainability, NXP has established this framework under which NXP can issue Green Innovation Bonds.

Following the ICMA Green Bond Principles and Sustainability Bond Guidelines June 2019, NXP's Green Innovation Bond Framework has the following four core components:

1. Use of Proceeds
 2. Process for Project Evaluation and Selection
 3. Management of Proceeds
 4. Reporting
- External Review.*

01 USE OF PROCEEDS

INTRODUCTION

Electronic chips have the ability to make systems smarter and contribute to energy saving in multiple ways. In some cases 'green chips' are optimized for minimal power consumption. An example is NXP's family of low-power microcontrollers.

Green chips can also be tailored to minimize the energy consumption in the end-products they are embedded in. For example, our GreenChip solutions consist of chips that can switch power adapters for consumer electronics from active mode to sleep mode, reducing power consumption significantly. With hundreds of millions of power adapters plugged in permanently in houses worldwide, Megawatts of electric energy are being saved thanks to these innovations.

NXP technology developments also support objectives that address energy-efficiency targets and greenhouse gas emissions reduction. One example is the European "Green Deal" that foresees a boost of the EU's 2030 emissions target from 40% to a 50-55% reduction, with a goal for the EU to reach carbon neutrality by 2050¹. And in the U.S., 24 states have implemented statewide greenhouse gas targets, aiming at a reduction of emissions of 26 to 28% below 2005 levels by 2025². High-tech innovations, such as NXP's smart chips, help enable those ambitious goals.

NXP intends to increase its investments in research and development for the innovation of green chips, and this is where the majority of the proceeds of its Green Innovation Bond would be used. The investments will help strengthen NXP's ability to bring more and better green chips to market.

Below is a list of the green application domains where NXP wants to increase its R&D efforts.

PROJECTS PER "GREEN CHIP" APPLICATION DOMAIN



Fig. Three of the United Nations Sustainability Development Goals to which NXP aims to contribute.

¹ https://ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission_en.pdf

² <https://www.c2es.org/document/greenhouse-gas-emissions-targets/>

1. The NXP GreenChip solutions: world leading energy efficiency in power supplies

Hundreds of millions of electronic devices used by consumers worldwide use power adapters for converting grid voltage into a lower voltage level, often 5 to 12 V. NXP's latest resonant technology achieves 10% more energy efficiency at low loads than competing products³. These NXP GreenChip resonant solutions enable our customers to comply with (existing and future) challenging emission-reduction and energy-efficiency regulations. NXP's GreenChip TEA1716 was the first to meet the EuP (Energy-using Products) Lot 6 regulation for a resonant power supply. Resonant technology in PC power supplies enables the energy efficiency to increase from ~84 to ~92% vs conventional technologies. NXP's high efficiency at low loads enables that a complete separate standby converter can be omitted, making the use of resonant technology also cost competitive. In addition, NXP's sustainable GreenChip design saves a considerable amount of raw materials. The chips are free of Antimony Oxides and Halogen, and with every generation of chips NXP's constant innovations save up to 15% on external components. This means less plastic package and less gold bond wire are required.

2. Smart mobility

Electric vehicles are ramping in volume, but their limited range is still cited as a main obstacle to buying by many people. Battery control and energy management, extending the range of electric and hybrid cars, are key innovation areas of NXP, because smart chips can make the real difference here. Smart chip solutions enable the efficient use and regeneration of energy, resulting in extended efficiency and hence range, as well as lower emissions in the case of hybrid vehicles. Academic research suggests that improved decision-making and control of hybrid electric vehicles can increase the range of the vehicle by up to 28%⁴. NXP is ideally placed to provide the safe high performance compute platform to perform these advanced algorithms. In battery management systems, NXP is offering scalable solutions across 14/48/400/800V batteries, with accuracy, functional safety, automotive quality, reliability and system cost efficiency required by the global car makers to electrify their fleet.

NXP is now developing motor control solutions for 48V mild hybrid vehicles: cars with a regular combustion engine equipped with a small electric motor/generator. The hybrid power drive adds torque at low speeds when accelerating, assisting the combustion engine, thereby increasing fuel economy by 10%-20% compared to a combustion-only engine⁵. Precision analog design is a core competence of NXP which, along with our scalable portfolio and optimized algorithms, can help the car-maker to enable smaller batteries and hence less demand for raw materials. In electric vehicle control, we are also expanding the performance of the control chips. Advanced algorithms and integration of components are applied to optimize overall system power consumption, helping to increase energy efficiency and vehicle range.

3. Preventing emissions through automated and connected traffic

Advanced Driver Assistance Systems (ADAS), as enabled by NXP chip architectures, range from simple features like cruise control, up to fully self-driving cars. Autonomous driving can reduce fuel consumption up to 45%.⁶ The on-board systems are more capable than humans of smoothing the ride and saving fuel. Speed limits are automatically observed, and car-to-car communication systems help to avoid and even prevent traffic congestions. Smart vehicle automation enables traffic to move at higher speeds due to less congestion, reducing energy consumption and emissions up to about 60%.⁷ NXP has demonstrated platooning technology

³ Below 20-30% power load the energy efficiency gain vs. competition is around 10% (NXP data).

⁴ <https://cecas.clemson.edu/~avahidi/wp-content/uploads/2016/10/chen.pdf>

⁵ <https://www.sciencedirect.com/science/article/pii/S1110016817301539>

⁶ <http://www.osti.gov/biblio/1409303>

⁷ https://www.researchgate.net/publication/300566839_Vehicle_Automation_and_Its_Potential_Impacts_on_Energy_and_Emissions

for trucks, since past studies show that the net fuel savings of platooning are between 5% and 8% compared to vehicles driving independently and isolated from each other.⁸ NXP will invest more R&D resources in developing increasingly advanced and smart ADAS systems.

4. Significantly reducing power consumption of 5G networks

Base-stations for wireless communication transmit huge amounts of data over long distances. The power amplifiers and antennas together typically consume multiple kWatts of electric power per station. The upcoming superfast fifth generation mobile internet standard (5G) is expected to further boost energy consumption, as many more base-stations will be required in a 5G network. In classical mobile network systems, to reach a mobile phone user, energy is radiated from the central base station in an omnidirectional way (360°). As a consequence, a lot of energy is wasted. The crucial step here is to create focused beams between base station and mobile device. This can be done through “beam steering” for which NXP is currently developing beamforming antenna devices. Deploying this technology saves up to a factor of 30 for the wireless signal transmission between antenna and phone. NXP specialists estimated that the projected energy savings due to beamforming antenna’s may equal the typical energy consumption of 2 to 2.5 million US households.

5. Edge processing – reducing the need for energy-hungry cloud services

NXP’s edge processing portfolio for automotive, industrial and IoT offers industry-leading power efficiency and battery life. Our smallest microcontrollers consume as little as 1 microWatt in deep power down modes. This degree of power efficiency provides years of battery life. New research and development projects are aimed at breaking our power consumption record in Microcontrollers, where our i.MX RT family is already setting new standards for the industry being twice as power efficient as most competitors. NXP’s advanced application processors enable complex and fast computing “at the edge.” This means that processing is performed directly in IoT devices such as cameras, wearable devices, domestic appliances and industrial equipment, rather than requiring data to be sent to/from the cloud for processing. NXP is increasingly providing customers the ability to perform local data processing through machine learning intelligence, helping to minimize unsecure and power-hungry cloud dependence. NXP specialists estimate that edge processing uses less than half the energy (< 50%) of cloud processing.

Future research will be focused on the development of more autonomous edge computing chips which adaptively turn on only when needed, helping to reduce energy wastage. NXP sees great opportunities for energy saving, as well as for our business, by further enhancing our investments in Artificial Intelligence R&D for usage in microcontrollers.

6. Smart buildings

According to the International Energy Agency, buildings account for nearly one-third of global final energy consumption and 55% of global electricity demand; more than in transportation, and more than in industry.⁹ Vast amounts of energy can be saved by the use of smart control systems for air-conditioning, heating, lighting and other interior provisions. Improving the operational efficiency of buildings by using real-time data may lower total energy consumption between 2017 and 2040 by as much as 10%.⁹ By adapting

⁸ https://www.researchgate.net/publication/224190659_An_experimental_study_on_the_fuel_reduction_potential_of_heavy_duty_vehicle_platooning

⁹ <https://www.iea.org/reports/digitalisation-and-energy>

equipment usage to human presence, activity, and preference settings, energy consumption may be decreased significantly, compared to the “always-on” settings often applied today. Also here, Artificial Intelligence can make these systems self-learning, further minimizing energy usage fully autonomously. NXP develops the systems and components that may help “smarten” buildings and homes.

7. Green projects related to our manufacturing and non-manufacturing activities

Part of the proceeds of the Green Innovation Bond will be invested in several projects aimed at reducing the negative effects of our activities on the environment:

- Scope 1 and 2 energy efficiency measures, including refurbishment of buildings, at our manufacturing and non-manufacturing facilities
- On-site and off-site solar and wind energy projects to reduce scope 2 emissions generated by our manufacturing and non-manufacturing facilities, and supply chain
- Reduction of scope 1 Green House Gas emissions from our manufacturing facilities with the focus on emissions from the use of Fluorinated gases (‘F-gases’) and High Temperature Fluids through process optimization, replacement and abatement
- Projects that facilitate the use of materials that are safer for the environment and human health such as the replacement of lead as a bonding material in semiconductor packaging technology
- Industrial water efficiency, water conservation and water quality projects

NXP’S MISSION

NXP is the company that provides Secure Connections for a Smarter World. A world in which technology is key to making life safer, cleaner, healthier, more secure and more comfortable. Without the investments by shareholders in our company we would not be able to continue our expensive and essential R&D programs. The focused R&D investments enabled by our Green Innovation Bond will contribute to the sustainability of both our business, and of the smarter world we are helping to create.

02 PROCESS FOR PROJECT EVALUATION AND SELECTION

Projects financed and/or refinanced through the Green Innovation Bond Framework are evaluated and selected based on compliance with the Green Innovation Bond Eligibility Criteria, aligned with NXP's strategic sustainability objectives and in compliance with applicable national, European and international environmental and social standards and regulations, to ensure a stringent management of any potential negative environmental and societal impacts.

The selection and allocation of the Eligible Green Innovation Project Portfolio was conducted jointly by NXP's Green and Sustainable Innovation Bond Committee, formed by representatives of Group Finance, Sustainability, Corporate Strategy Department, our Chief Technology Officer, and other parties nominated as subject matter experts. The NXP Green and Sustainable Innovation Bond Committee meets at least on an annual basis.

Evaluation and selection methodologies are aligned with achieving environmental targets detailed in NXP's yearly Sustainability Report*

03 MANAGEMENT OF PROCEEDS

NXP intends to allocate the proceeds from the Green Innovation Bonds to an eligible green project portfolio. Projects will be selected in accordance with the Use of Proceeds criteria and the Evaluation and Selection process presented above. The projects consist of new and/or existing projects.

Green Innovation Bonds are administered by the NXP Treasury team. Our governance model includes experts from across the company to ensure alignment to the framework. NXP will at all times keep and monitor a separate register of eligible projects and strive over time to achieve a level of allocation for the Eligible Green Innovation Project Portfolio which, after adjustments for intervening circumstances (including but not limited to, sales and repayments) matches or exceeds the balance of an amount equal to the net proceeds from its outstanding Green Innovation Bonds. Additional Eligible Green Innovation Projects will be added to the Issuer's Eligible Green Innovation Project Portfolio to the extent required to ensure that an amount equal to the net proceeds from outstanding Green Innovation Bonds will be allocated to Eligible Green Innovation Projects, until the maturity of the bonds.

* (found via https://www.nxp.com/company/our-company/about-nxp/corporate-responsibility:CORP_SOCIAL_RESP)

Any pending allocation proceeds may temporarily be held in NXP's treasury liquidity portfolio, in cash or other short term and liquid instruments, or to pay back a portion of its outstanding indebtedness.

04 REPORTING

NXP will make and keep readily available reporting, covering the allocation of the net proceeds to the Eligible Green Innovation Project Portfolio and, wherever feasible, reporting on the impact of the Eligible Green Innovation Project Portfolio, at least at the category level.

Reporting will be embedded in NXP's sustainable reports until full allocation of Green Innovation Bond net proceeds. Any material developments, such as modification of the Framework or allocation portfolio, will be reported in a timely manner.

a. Allocation Reporting

The Allocation Report will provide:

- The total amount of investments and expenditures in the Eligible Green Innovation Project Portfolio
- The amount or percentage of new and existing projects
- The balance of unallocated proceeds

b. Impact Reporting

Where feasible, NXP also intends to report on the sustainability impacts of the projects funded with the Green Innovation Bond proceeds, by way of its existing Sustainability Reporting. This may be supplemented by qualitative and/or case-study reports on outcomes and impacts of the projects funded. Where relevant, information may be provided on data reporting and impact assessment methodologies, to increase transparency.

EXTERNAL REVIEW

This NXP Green Innovation Bond Framework has been reviewed by Sustainalytics, which has issued a Second Party Opinion. The Second Party Opinion as well as the Green Innovation Bond Framework will be made available to the Green Innovation Bond investors on:

https://www.nxp.com/company/our-company/about-nxp/corporate-responsibility:CORP_SOCIAL_RESP

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