



2021 Soneva Sustainability Report

Welcome to Soneva

Guardians of places that have existed long before us, our unique vision is inspired by nature's magnitude, mystery and enchanting beauty. We work hand in hand with the environment to craft beautiful, beyond bespoke experiences where discovery is a way of life.

Soneva is built on the foundation that a business must exist for a greater purpose than shareholder returns. We believe in a natural excellence in everything we do, whether it is delivering the ultimate in guest experiences or providing energy to the rural poor in Myanmar via the Soneva Foundation. We strive to set the benchmark for responsible tourism and we are strong advocates for the overall positive impact of travel and tourism, and the key role it plays in conservation.

www.soneva.com

www.soneva.com/sonevafoundation



Founders' Statement

When we built Soneva Fushi more than 25 years ago, we knew the locations of our resorts were precious, but we didn't know the pressures they would face. Since 1995, the threats to our planet have not just become more understood, they are playing out in real time. This is nowhere more apparent than in our oceans, which are particularly stressed with a twin crisis of climate change and pollution.

We have invested in coral propagation for years, but recently the frequency and intensity of coral bleaching events have made it clear that to have an impact on this devastating problem, we need to operate at a much larger scale. Our goal is to grow enough coral in our nursery at Soneva Fushi to outplant two hectares of coral to the reef each year – one of the largest coral farms in the world – and next year to do the same at Soneva Jani. This is the scale that is needed to have a meaningful impact and as such, our intention is to be one of the global leaders in coral propagation in the world within the next five years.

Ever since we opened Soneva Fushi in 1995 sustainability has been at the heart of our company purpose. We founded Soneva with the vision of proving that luxury, sustainability and profitability can go hand in hand. While we have always had very clear sustainability goals, we have also learnt that so much of our journey is an evolution. One idea builds on another and sometimes our best learnings have come from failure.

We can see this with our mosquito project which builds on past failures to control the mosquito population as well as the desire to eradicate the use of chemicals. What was a frustrating situation forced us to think creatively and now we are achieving a 98% reduction in our mosquito population without the use of pesticides.

Today, we feel able to say that we have demonstrated that values and success can go hand in hand. Accolades such as the World Travel and Tourism Council Tourism for Tomorrow award, which recognises the world's best examples of sustainable tourism businesses and destinations around the world, make us extremely proud.

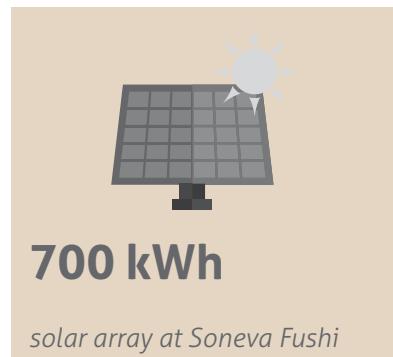
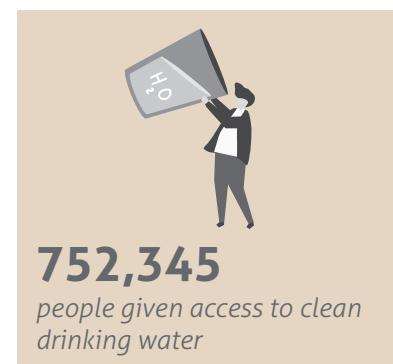
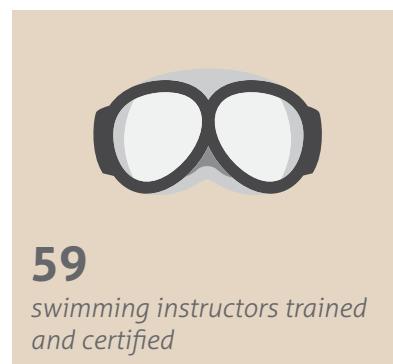
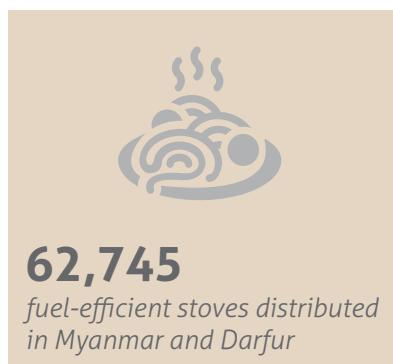
But the best honour of all is when guests return to us. Our clarity of purpose has led to levels of guest loyalty and repeat business that far surpass industry norms, and this tells us unequivocally that our Soneva values matter to our guests as much as the experiences they have at our resorts.

**Sonu and Eva
Founders, Soneva
Founders, Soneva Foundation**

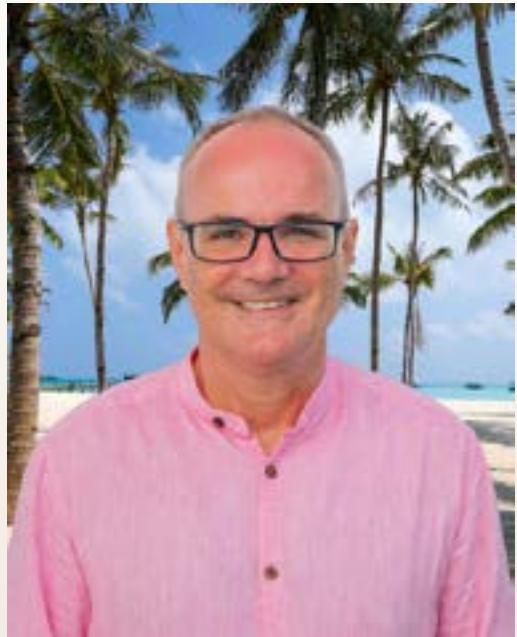


Our Sustainability Journey in Numbers

We welcomed our first guests to Soneva Fushi in 1995. The following are some of the highlights of our sustainability journey so far.



CFO and Deputy CEO Statement



For a company to operate and grow, it must exploit four primary resources: financial capital, natural capital, human capital and social capital. And most importantly, it needs to measure the latter three of these resources just as diligently as the first.

At Soneva, we are not short on purpose. Through the years we have seen that our commitment and drive to operate in the most sustainable way possible has added to our bottom line, and to a large degree this is a function of the clarity of purpose which signposts our path. But it is also because we measure each of the primary resources that are essential to our business to ensure that however well-intentioned we are, we never diverge from this path. Purpose is most clear when it is backed up with data.

Our Total Impact Assessment (TIA), allows us to get to the root of each area of our operations and to understand and cost our sustainability impacts. Building and maintaining world-class resorts is a resource-intensive endeavour. While every area of our resort design and build process is guided by the highest sustainability standards, inevitably the build process draws on natural capital. The TIA allows us to make informed decisions of how and where to minimize and offset the impact of our developments and ongoing operational activities.

Equally importantly, our TIA informs where we should invest our energies and our finances for our human and social capital. Human capital initiatives such as Celebrating Equity, Diversity and Inclusion, which celebrates and champions hosts from all faiths, backgrounds and cultures, sends a strong message of welcome to anyone who would like to join our company and ensures we can recruit the best people.

The success of Soneva Namoona, which charts a course for a zero waste Maldives, can in part be attributed to the ingenuity and technical expertise of our hosts. But the project would be at an absolute standstill without the good faith, dedication and partnership of our local island neighbours. Investment in social capital yields some of the most fundamental rewards to any business.

On an international scale, the TIA confirms that our investment via the Soneva Foundation pays both environmental and social dividends, via our fuel efficient cookstoves and our forest restoration programmes.

Of course, no amount of financial planning or sustainability strategizing can anticipate every eventuality. Over the past two years, we have had to pivot to the Covid-19 crisis just like everyone else. While the pandemic undoubtedly took its toll, I am proud that we were able to keep our resorts open throughout, protect jobs, and set up our own testing lab that offered complimentary tests to local islands in the Maldives.

We look forward to a prosperous and healthy 2022.

Bruce Bromley
Chief Financial Officer and Deputy CEO, Soneva
Trustee, Soneva Foundation

2021 Highlights

Forest Restoration Mozambique



The Soneva Foundation has engaged Eden Reforestation Projects to plant 3.7 million trees in Matica Sede, which will mitigate 2.4 million tons CO₂. Deforestation is responsible for about 11% of global carbon emissions. Restoring forests helps mitigate climate change and improve biodiversity. In 2012, the Soneva Foundation planted 500,000 trees in the Chiang Mai region of northern Thailand.

Coral Restoration



Soneva Fushi, the Soneva Foundation, Coralive and Ark2030 have partnered to set up one of the biggest coral nurseries in the world using Mineral Accretion Technology (MAT) which is effectively an electrified reef. Using this technology, the corals will grow at an increased speed of 300%. Our goal is to propagate 50,000 coral fragments every year.

Makers' Place



Makers' Place is a fully carbon-neutral, tailor-made island studio that has the capacity to recycle huge volumes of plastic waste and aluminium into works of art, as well as practical objects and building materials. Recycling resort and local island waste on-site removes the need to transport waste to faraway recycling facilities and prevents damage to the local ecosystem.

Zero Mosquitos



In 2021 we reached a milestone: 2.5 years without pesticide fogging at Soneva Fushi and 1.5 years at Soneva Jani. Correspondingly, our mosquito population has fallen by 98%. We have swapped chemicals which indiscriminately kill wildlife for chemical-free mosquito traps that emit a combination of carbon dioxide and lactic acid, attracting mosquitoes and killing them in an environmentally friendly way.

Learning and Development



The one-year LEAD programme was launched in 2021 which takes hosts through twenty workshop days aligned with one-to-one coaching. Each participant will read six business books that they have to review. Celebrating Equity, Diversity and Inclusion is an 18-month project to solicit host views on equality, diversity and inclusion (EDI) and include targets in management KPIs.

Hornbill Reintroduction



The Soneva Foundation is working with the Thailand Hornbill Research Foundation to reintroduce hornbills on Koh Kood, Thailand. The hornbill helps to spread the seeds of large trees, which improves the biodiversity of the forest. The first pair of oriental pied hornbills was brought from Zoological Parks Organization to Koh Kood in December 2021.

Action Against Hunger



In 2020, Soneva committed USD 150,000 to the Soneva Foundation and Action Against Hunger UK to deliver a three-year project to fight childhood malnutrition in Bangladesh. Families will receive skills and business training to increase food production at home using climate resilient farming methods. Families can grow nutritious food in their own gardens or buy it with their additional income.

Myanmar Stoves Campaign



In 2014, the Myanmar Stoves Campaign became the first Gold Standard certified carbon project in Myanmar. Since then, we have distributed 36,745 stoves, improving the lives of 170,229 people and generating USD 28 million of social capital. By the end of 2021, 233,641 carbon credits have been issued which have been excluded from the Soneva calculation of total carbon offset.

Social & Environmental Conscience Statement



In this report, you will find a snapshot of the breadth of activities that drives our responsible business practices, which we have refined and improved over the years.

We are proud to say that we remain carbon neutral including indirect emissions such as guest air travel.

In 2021 we have introduced several new initiatives that we hope will have a regenerative impact. For instance, we have set up one of the largest coral nurseries in the world using Mineral Accretion Technology at Soneva Fushi that will produce 50,000 coral fragments every year. We have also signed an agreement to plant 3.7 million trees over the next four years in Mozambique. Furthermore, this year we saw the first pair of oriental pied hornbills arrive on Koh Kood, Thailand to start the reintroduction process there.

It is not all about new projects, but also ensuring existing activities continue and evolve in the right direction. Our zero mosquito project has achieved a 98% reduction in mosquito populations at both Soneva Fushi and Soneva Jani without the use of chemicals, something that we are very proud of.

Creating waste-to-wealth is important to us and we evolved the concept further at Soneva Fushi by adding a Makers' Place that upcycles aluminium and plastic onsite. This ties very well with our community success of Soneva Namoona that sets a course for a zero waste Maldives.

2021 marks milestone for the Soneva Foundation, in that it was able to sell a good number of carbon credits. These were excess of what Soneva needs to stay carbon neutral. The sale allows the Soneva Foundation to continue to expand the Myanmar Stoves Campaign into its ninth year as well as invest in other carbon mitigating projects in 2022. Our focus on impact investing is paying dividends.

We look forward to an exciting 2022 with lots of regenerative initiatives.

Arnfinn Oines
Social & Environmental Conscience, Soneva
Secretary, Soneva Foundation

Total Impact Assessment

The Soneva Total Impact Assessment (TIA) allows us to take a 'planetary boundaries' view of all our social and environmental impacts. This includes direct impacts at our resorts and indirect impacts via our supply chain and guest air travel. Measuring our impacts provides us with a tool to drive better decision-making, more effective resource allocation and to influence the business decisions of our suppliers.

Our natural capital cost – resources provided by nature – went up by 40% compared to 2020, which reflects higher resort activities due to the Covid-19 pandemic. While our food purchases went up by 96%, natural capital costs only rose by 40% reflecting improved performance. The lower increase in natural capital is a direct result by our strong focus on a healthy diet with more plant-based options than meat. Our social capital decreased by 91% due to challenges in distributing cookstoves in Myanmar due to both the Covid-19 pandemic and the military coup d'état. Our human capital was \$3.8 million – a solid 42% increase as we hired more hosts to service increased resort activities.

NATURAL	-16,594,851
HUMAN	3,830,649
SOCIAL	332,173
ECONOMIC	109,063,274
TAX	16,266,315

Key

Bars represent the scale of our impact

Green represents a positive contribution

- Direct
- Indirect

Red represents a negative contribution

- Direct
- Indirect

Definitions

Direct: Impacts from Soneva business operations.

Indirect: Impacts via our supply chain; human development improvements in social wellbeing; indirect CO₂ emissions such as guest air travel.



Carbon Footprint & Mitigation 2021

Soneva's vision is to become decarbonising through implementing programmes that will result in a net absorption of CO₂. An environmental levy of 2% is added to each guest's stay. The Soneva Foundation invests this in projects that have a positive environmental, social and economic impact and importantly, offset carbon emission from resort activities and guest flights.

Soneva has been carbon neutral for both direct and indirect emissions since 2012. Our total carbon footprint for 2021 was 64,460 tonnes CO₂ of which 77% was from indirect emissions.



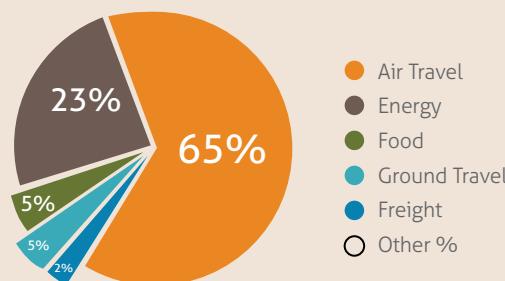
TOTAL CARBON FOOTPRINT

64,460

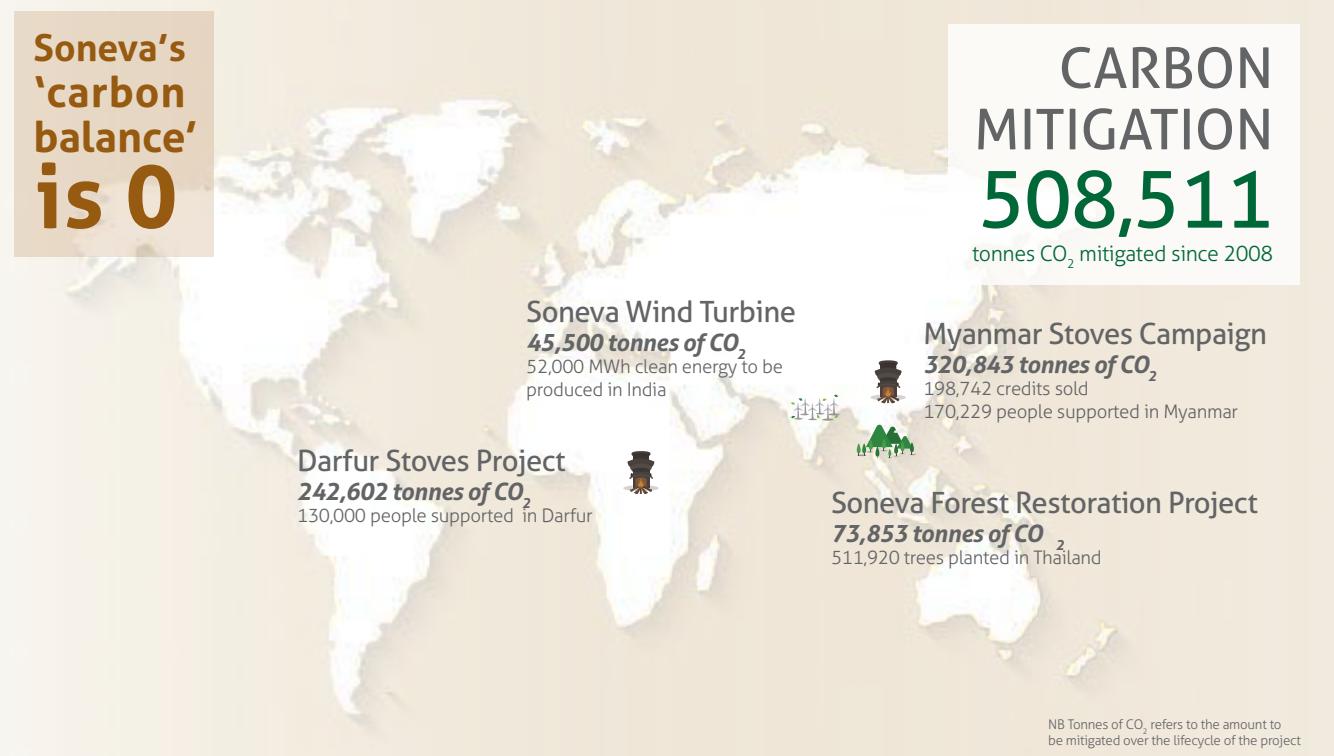
tonnes CO₂ in 2021

↑ This is +11% relative to 2009 base year

Soneva carbon footprint by source:



Soneva's 'carbon balance' is 0



Soneva Foundation mitigation targets¹

7 years

Myanmar Stoves Campaign

7 years

Darfur Stoves Project

+1M tonnes of CO₂

40 years

Soneva Forest Restoration Project

20 years

Soneva Wind Turbine

¹ Mitigation targets over lifecycle of projects

Waste-to-Wealth

The Maldives is a country with big logistical challenges and few municipal waste facilities. The majority of resorts send their waste to Thilafushi, a dedicated waste island, at a financial cost to themselves and an environmental cost to the Maldives.

At Eco Centro, our regenerative waste hub, we aim to demonstrate a completely different system that views waste as an asset rather than a problem.

Our onsite facilities are equipped to recycle most of our plastic, aluminium and glass waste. This significantly reduces the carbon footprint of our waste which is otherwise sent for recycling in Sri Lanka or India. Any remaining waste that we send to Thilafushi or for recycling is compacted and baled which reduces the carbon footprint of transportation and also prevents ocean spillage.

82% of our solid waste was recycled at Eco Centro in 2021. As well as sending waste for recycling, we also use 'waste' materials to create useful items for our operations as well as works of art, including door handles, glass wear and wall tiles.

2021 key numbers

USD 426,297 of value was created from Waste-to-Wealth:

- USD 177,648 from Organic Gardens
- USD 202,861 from Glass Studio
- USD 46,297 from Eco Centro
- USD 1,218 from Maker's Place

Over 1 million kg of materials recycled:

- Organic food waste: 386,572 kg
- Organic garden waste: 426,211 kg
- Glass: 73,170 kg
- Cardboard: 71,425 kg
- Metal: 36,176 kg
- Biochar produced: 12,808 kg
- Plastic: 7,905 kg



Organic Gardens



In 2021, 45,109 kg of fruit and vegetables were grown at Soneva resorts which yielded a value of USD 177,648.

Soneva Namoona

Key numbers

11 Namoona islands

- 101,680 plastic bottles avoided
- 140 tonnes of waste sent for recycling
- 390 children and adults taught to swim in 2021
- 14 swimming instructors trained in 2021

The small coral islands of the Maldives are among the most beautiful locations on our planet. While they may seem fragile, their ecosystems have actually developed over thousands of years into some of the most complex reef systems in the world. What many tourists do not see when they visit the Maldives is that local islands are facing a very modern threat - the scourge of plastic litter which washes up on beaches and smothers coral reefs.

In response, in 2019, we launched Soneva Namoona, a partnership between Soneva Fushi, our three neighbouring island communities of Maalhos, Dharavandhoo and Kihaadhoo, and international NGO Common Seas, funded by Soneva and the Soneva Foundation. Soneva Namoona provides a blueprint for how all Maldivian islands can phase out single-use plastic, introduce recycling and inspire a new generation of environmental stewards by fostering a love for the ocean and the natural world.

In 2021, Soneva Namoona expanded to include eleven islands across Baa Atoll and Noonu Atoll, and we received additional funding from USAID.



Recycling Boat



In December 2021, Soneva Namoona achieved a Maldives first: the seven Namoona islands in Baa Atoll commissioned a recyclable waste collection boat to collect 50 tonnes of segregated, compacted, and baled recyclable waste and transport it overseas for recycling.

Soneva Water

Key numbers

- 2.2 million single-use plastic bottles avoided by Soneva
- USD 1,557,130 raised for clean water projects in 54 countries
- 752,345 people given access to clean and safe drinking water

Since we banned plastic straws in 1998, Soneva has been on a mission to eliminate single-use plastic from our resorts. The world is awash in plastic waste and much of this is from the discarded drinking bottles of those who are fortunate enough to be able to buy clean drinking water.

In 2008, we banned the import of branded bottled water, becoming one of the first resorts in the world to do so. Now, each of our resorts filters, mineralises and bottles its own Soneva Water in reusable glass bottles, avoiding the production of more than 2,200,000 plastic bottles since inception.

This is a double win with sales of Soneva Water raising around USD 200,000 every year to counter the injustice that 750 million people worldwide do not have access to clean and safe drinking water and 2.5 billion people lack basic sanitation services.

We work with charities such as Water Charity and Thirst Aid to fund over 500 clean water projects in more than 50 countries, including on our neighbouring islands in the Maldives.



Responding to Covid-19

The COVID-19 pandemic was very challenging for the hospitality industry. However, like any crisis, there were also pockets of opportunity that emerged, which forced us to become more agile, more creative and more efficient. Soneva's focus throughout the COVID-19 pandemic was very much on these opportunities, which facilitated a strong business performance, and therefore allowed us to keep our guests and hosts safe, keep our resorts open, and protect jobs.

In fact, we were the very first in the Maldives (and possibly the world) to open our own PCR test laboratory and offer complimentary tests for our hosts, our guests and our communities, which was a wonderful idea from our founder and CEO Sonu Shivdasani. Onsite PRC testing was a unique offering that meant we could reassure our guests that Soneva resorts were very safe destinations to visit, and to help control the spread of Covid-19 in our island homes. We complemented our rigorous sanitation and safety measures with the advice of our on-site ayurvedic doctors to offer our guests immune-boosting remedies such as Andrographis paniculata among other treatments. Furthermore, we were fortunate to have a very supportive government in the Maldives who minimised entry burdens for tourists, while at the same time keeping Maldivians safe.

I am incredibly proud of the positive attitude of our amazing team and their commitment to ensuring guests had a safe and memorable experience, even during such challenging times. I am also proud that we were able to keep our community engagement and sustainability programmes running throughout the crisis, particularly Soneva Namoona.

The pandemic taught us a lot, and I think we are well positioned for the future. People are now, more than ever, concerned about their wellness. Having just introduced our new wellness brand, Soneva Soul, we are helping our guests to reconnect using the best of Eastern and Western science and tradition.

Carissa Nimah
Guardian of the Brand (Chief Commercial Officer), Soneva



Soneva Total Impact Assessment Methodology

The Soneva Total Impact Assessment (TIA) methodology is inspired by the pioneering efforts of companies such as Puma and PwC to measure their Environmental Profit and Loss (EP&L) and Total Impact Measurement and Management (TIMM) respectively. As yet, there is no industry standard for environmental and social reporting so we have developed our methodology internally with the intention to improve on it year-on-year. Our Human Capital and Social Capital sections were developed with assistance from GIST Advisory.

The TIA assesses impacts from sources over which we have direct and indirect control within the following five categories.

1. Natural Capital

a. CO2 emissions

CO2 emissions from energy, air travel, ground travel, food, paper, waste and water from Soneva's direct and indirect operations

b. Direct water use

c. Environmental Profit and Loss

Impacts from energy, water, land use and CO2 emissions via the food and beverage products in our supply chain. Collectively we refer to these supply chain impacts as our EP&L.

2. Human Capital

a. Human Capital Creation

The value of the jobs created and sustained in our operations by salary, training, working environment and experience.

b. Human Capital Externalities

The value created in society from hosts' post-Soneva employment.

3. Social Capital

a. Social Capital calculates the value of the relative improvement in well-being of individuals comprising the communities Soneva has been involved in.

4. Economic Capital

- a. Payroll
- b. Operational Expenditure
- c. Investments

5. Tax

- a. Property Tax
- b. People Tax
- c. Production Tax

The total value for each category is combined with the Natural Capital deficit to give the value of the Total Impact Assessment.

Inclusions and Exclusions

Soneva accounts for all of its direct and indirect impacts and no impacts have been intentionally omitted from this report.

Base Year Selection

To measure performance Soneva has set a base year of 2015 as a reference against which to assess progress on reductions targets in the future years.

Quality Assurance

The data provided by Soneva Fushi, Soneva Jani and Soneva Kiri presented in this report was obtained under the supervision of Soneva Social & Environmental Conscience and is assumed to be accurate and complete.

Where accurate measures of emissions are not possible, estimates have been made. Soneva strives to improve the accuracy of its measurement and reporting of this voluntary disclosure.

Soneva Total Impact Assessment Methodology

Natural Capital

Natural capital represents the positive and negative impacts that our operations have on the natural environment.

Environmental Profit and Loss

We calculate the true cost of ecosystem services provided for our food and beverage products via our supply chain. There are a number of environmental drivers of which we assess land use, water, energy and CO₂ emissions. Collectively we refer to these impacts as our Environmental Profit and Loss (EP&L). We have placed a monetary value on each of the four environmental drivers based on research from academic papers as shown in Figure 1.

Figure 1: Environmental Drivers

Environmental Drivers				
	Land use	Water	Energy	CO _{2e}
Pricing methodology	Global farmland index approach	Cost of green, blue and grey water	Oil = energy	Social cost of carbon/effective cost of carbon
Breakdown of usage per kg of top ten products	Feed production, grazing processing, infrastructure, etc.	The green, blue and grey water footprint of farm animals and animal products	Crop and feed production, building and construction, up/downstream processes, etc.	Feed production, on-farm energy usage, transportation, commodity delivery, water supply, etc.
Derived costs	USD 5,861/ha	USD 1.98/m ³	USD 108/barrel of oil	USD 35/tonnes of CO _{2e}

Analysis

We have completed detailed studies of 44 of our top products, accounting for 75% of our total food purchase dollar value. For the remaining products we have used averages in categories such as meat, seafood, fruit and vegetables, groceries, dairy, alcoholic beverages and non-alcoholic beverages using the following methodology:

1. A universally acceptable model of Life Cycle Assessment.
2. Conversion of the environmental impact in monetary terms – refer to Figure 1.
3. Land use, water, energy and carbon emissions breakdown – refer to example in Figure 2.

CO₂ Emissions

Our CO₂ emissions (for methodology see page 27) and our EP&L constitute the Natural Capital component of our TIA. We have converted our CO₂ emissions to a dollar value using a conversion factor of \$35 per tonne of CO₂. For water consumption we use a conversion factor of \$1.98 per m³ as shown in Figure 1.

Figure 2: Life Cycle Assessment: case study of beef

Land use	Unit	Amount	Notes: Land use	
For a billion kgs	Ha	6,106,000		
For 1 kg	Ha/kg	0.006		
Total land used per kg of beef	Ha/kg	0.006		
Water usage			Notes: Water	
<i>In feed</i>				
Grazing	Green	L/kg	21,121	
	Blue	L/kg	465	
	Grey	L/kg	243	
Mixed	Green	L/kg	14,803	
	Blue	L/kg	508	
	Grey	L/kg	401	
Industrial	Green	L/kg	8,849	
	Blue	L/kg	683	
	Grey	L/kg	712	
Total water in 1 kg of beef		L/kg		
	Green	L/kg	14,924	
	Blue	L/kg	552	
	Grey	L/kg	452	
<i>Summary: Water use</i>				
Feed		L/kg	15,928	
Miscellaneous (maintenance, drinking)		L/kg	-	
Total water in 1 kg of beef	L/Kg	15,928		
Energy	%	Unit	Amount	Notes: Energy
Processing plant	75%	Mj/kg	12	1. Timeframe consideration: 485 days birth - slaughter.
On-site processes	14%	Mj/kg	2	2. Carbon is the fundamental unit of energy within animal systems; thus differences in total maintenance energy can be considered to be a proxy for both resource use and CO ₂ emissions.
Upstream processes	7%	Mj/kg	1	
Transport	4%	Mj/kg	1	
Fossil fuel energy		Mj/kg	-	
Total energy	100%		16	

CO_{2e}	%	Unit	Amount	Notes: Carbon emissions
Enteric processes	30 %	Kg CO ₂ /kg	4.71	
Feed production	40 %	Kg CO ₂ /kg	6.27	
On-farm energy consumptions	20 %	Kg CO ₂ /kg	3.14	
Manure management	0 %	Kg CO ₂ /kg	-	
Transportation	4 %	Kg CO ₂ /kg	0.63	
Commodity delivery	2 %	Kg CO ₂ /kg	0.31	
Water supply	2 %	Kg CO ₂ /kg	0.31	
Administration	2 %	Kg CO ₂ /kg	0.31	
Total CO_{2e}/kg of beef	100%	Kg CO₂/kg	15.7	

Human Capital

Human capital calculates the value of the jobs created and sustained in our operations by salary, training, working environment and experience, namely Human Capital Creation. It also calculates Human Capital Externalities, which is the value created in society by hosts post-Soneva employment.

The key drivers of Human Capital are:

- Skills generated by company training.
- Value of association with company brand.
- Individual capacity to absorb and apply training.

Focus groups

The analysis constitutes two separate focus groups:

- Total employees in individual cohorts at Soneva Fushi and Soneva Kiri at the end of each financial year.
- New hires and trainees hired in each individual cohort annually.

Data collection

The following data points for hosts and trainees are used for the analysis. Data is segregated into five individual cohorts based on Soneva's employee structure and obtained from metrics collected on an annual basis by the human resources (HR) team:

- Total Employee Headcount (cohort-wise).
- Average Age of Employees (cohort-wise).
- Average Salary: Average annual compensation at the end of financial year for each cohort.
- Cost of Training: Marginal costs such as fees paid to external trainers, travel costs for training programme, and absorbed or allocable costs.

Quantification and valuation of HCX™

General reporting measures do not reflect the value of human capital impacts beyond a narrow 'incurred-cost' value whilst also ignoring the lifetime returns on the same. The value of the 'asset' created by skills training and other forms of human resource development is neither estimated nor reported. The positive externalities from attrition are usually neither measured nor reported. To address these failings in most reporting systems, the following key valuation parameters are incorporated in assumptions of GIST Advisory's HCX™ model:

- Future annual salary growth rate.
- Future annual attrition rate.
- Future annual increase in compensation attributable to Soneva.
- Per capita Human Capital (HC) distribution across training period.
- Discount rate.
- Long-run inflation rate.

Social Capital

Social capital calculates the value of the well-being generated by our outreach and philanthropic activities. To enable this, it is necessary to estimate quantitative (i.e. monetary) as well as qualitative values of the benefits gained as a result of Soneva CSR activities which are known to lead to improvement in well-being (i.e. social capital) at the individual and community level.

Drivers

Three programmes have been assessed that generate positive benefits for stakeholders across South East Asia. These are:

- Myanmar Stoves Campaign
- Soneva Ocean Stewards
- Soneva Eco Camp

The key drivers of social capital externalities for these three material programmes are:

- Income benefits stemming from productivity gains / employment opportunities.
- Indirect savings (i.e. monetary costs avoided) for beneficiaries attributable for Soneva initiatives.

Valuation and data collection

Valuing and measuring social capital both in physical and monetary terms involves developing benchmarks and metrics that identify welfare improvements as a direct result of a specific programme and derived within a specified period of time.

Table 1: Myanmar Stoves Campaign data indicators

Indicator	Unit	2019	2020	2021
Target population				
Location	Myanmar	Pyawbwe, Meikhtila and Tharsi	Pyawbwe, Mandalay and Magway	Pyawbwe, Mandalay and Magway
Total population of region	Number	772,636	772,636	772,636
Total number of households in region	Number	172,194	172,194	172,194
Total number of households covered under programme outreach	Number	5,749	4,845	381
Average number of people per household in region	Number	4.6	4.8	4.8
Percentage of women in total population	%	54.00%	54.00%	54.00%
Percentage of children in total population	%	28.00%	28.00%	28.00%
Primary occupation of households in region	Description	Farmers	Farmers	Farmers
Average monthly income per household in region	US\$	\$71.00	\$71.00	\$71.00

Table 1: Myanmar Stoves Campaign data indicators

Indicator	Unit	2019	2020	2021
Cook stove details				
Type of cook stove (primary) used prior to programme intervention	Description	Three stone cook stove	Three stone cook stove	Three stone cook stove
Type of fuel utilised by three stone cook stove (primary)	Description	Fuel wood	Fuel wood	Fuel wood
Thermal efficiency of three stone cook stove	%	10%	10%	10%
Quantity of fuel wood consumed per household per year (prior to programme intervention)	Kgs/year	3,938	3,938	3,938
Type of cook stove (secondary) used post programme intervention	Description	Envirofit M5000	Envirofit M5000	Envirofit M5000
Primary fuel used by Envirofit M5000 (secondary)	Description	Fuel wood	Fuel wood	Fuel wood
Market price of Envirofit M5000 cook stove	US\$	\$30.00	\$30.00	\$30.00
Thermal efficiency of Envirofit M5000	%	29.7%	29.7%	29.7%
Percent improvement in average fuel consumption by switching to Envirofit M5000 versus traditional three stone cook stove	%	50%	50%	50%
Unit cost of fuel wood	US\$/Kg	\$0.02	\$0.02	\$0.02
Percentage improvement in CO emitted per kg of fuel wood for Envirofit M5000 versus three stone cook stove	%	70.9%	70.9%	70.9%
Percentage improvement in Particle Matter (PM) emitted per kg of fuel wood for Envirofit M5000 versus three stone cook stove	%	44.7%	44.7%	44.7%
CO ₂ emitted per cook stove per year for three stone cook stove	Tonnes CO ₂ /year	7.8	7.8	7.8
CO ₂ emitted per cook stove per year for Envirofit M5000	Tonnes CO ₂ /year	3.05	3.05	3.05
Estimated social cost of carbon (current estimates based on Trucost)	US\$/tCO ₂	\$121.00	\$121.00	\$121.00
Vendor training				
Total number of vendors trained	Number	150	6	3
Percentage to local vendors employed post-training	%	100%	100%	100%
Average number of cook stoves sold per vendor in financial year	Number	38	808	127
Average income per cook stove sold (over period of two years) for vendor	US\$/cook stove	\$2.00	\$2.00	\$2.00
Average monthly income per vendor post-training in financial year	US\$/vendor	\$76.13	\$1,615	\$254
Cost of the programme				
Total cost of programme design & management in financial year	US\$	\$71,522	\$46,651	\$75,950
Total cost of programme implementation in financial year	US\$	\$104,225	\$125,000	\$125,000
Total fixed costs associated with programme in financial year	US\$	\$175,757	\$171,651	\$200,950
Percentage of total fixed costs borne by Soneva in financial year	%	100%	100%	100%
Total cost of purchasing Envirofit M5000 cook stoves in financial year	US\$	\$121,113	\$49,712	\$193,321
Total cost of distributing Envirofit M5000 cook stoves in financial year	US\$	\$3,020	\$3,020	\$8,400
Total variable costs associated with programme in financial year	US\$	\$385,905	\$124,133	\$201,721
Percentage of total variable costs borne by Soneva in financial year	%	100%	100%	100%

Table 2: Myanmar Stoves Campaign assumptions

Description	Unit	FY
Health expenditure		
Percentage of COPD afflicted population seeking healthcare	%	100%
Vendor training		
Average increase in annual income post-training	%	5%
Discount rate for NPV of future incomes	%	0%
Inflation rate	%	5%
Average quit rate (i.e., rate at which trained vendors quit occupation)		
Years 1-5	%	10%
Years 6-10	%	25%
Years 11+	%	20%
Notes:		
<ul style="list-style-type: none"> Women are primarily vulnerable to respiratory diseases caused by indoor air pollution. The most harmful constituents of indoor air pollution are particle matter (PM) and carbon monoxide (CO). The average reduction of both these pollutants (CO & PM) has been used as a proxy for reduction in the health cost of target population. 		

Table 3: Soneva Ocean Stewards data indicators

Indicator	Unit	2019	2020	2021
Target population				
Location	Baa Atoll, Maldives			
Target population	Children			
Total population of the region	Number	13,856	13,856	13,856
Swimming lessons				
Total number of children covered under programme	Number	370	0	126
Total number of adults covered under programme	Number	0	0	264
Annual frequency of conducting programme	Number	13	0	13
Average number of classes conducted under single programme schedule	Number	48	0	48
Average cost per beneficiary for participating in alternative programme providing same benefits (i.e. fees paid for similar swimming lessons to private instructors)	US\$	\$40	\$40	\$40

Table 3: Soneva Ocean Stewards data indicators

Indicator	Unit	2019	2020	2021
Employment				
Total number of adults trained under programme	Number	0	0	14
Total number of adults employed as swimming instructors post-training	Number	0	0	0
Skill development-employment ratio	%	0%	0%	0%
Average annual income of women employed as swimming instructors in financial year	US\$	\$7,000	\$7,000	\$7,000
Costs of the programme				
Total number of personnel employed under programme in financial year	Number	9	0	1
Total work hours per programme for employed personnel in financial year	Number	212	0	30
Average CTC per personnel in financial year	US\$ / personnel	\$698	\$698	\$698
Total average CTC of personnel for programme in financial year	US\$	\$698	\$698	\$698
Percentage of total fixed costs borne by Soneva in financial year	%	100%	100%	100%
Total fixed costs borne by Soneva in financial year	US\$	\$7,722	\$0	\$698
Total cost of travel incurred by programme in financial year	US\$	\$272	\$0	\$12,369
Other variable costs (material, literature, etc.)	US\$	\$2,098	\$0	\$0
Other personnel costs (hosts apart from trainers) in financial year	US\$	\$0	\$0	\$0
Total variable costs associated with programme in financial year	US\$	\$2,370	\$0	\$12,369
Percentage of total variable costs borne by Soneva in financial year	%	100%	100%	100%
Opportunity costs associated with the programme				
Total number of volunteers associated with the programme	Number	59	\$0	14
Average hourly wage rate in region in financial year	US\$	\$5.73	\$5.73	\$5.73
Total number of hours under programme in financial year	Hours	356	\$0	150
Average opportunity cost of volunteering (based on forgone incomes) per volunteer for programme in financial year	US\$/person	\$2,040	\$0	\$860
Total opportunity cost of volunteering (based on forgone incomes) for programme in financial year	US\$	\$120,353	\$0	\$12,033

Table 4: Soneva Ocean Stewards assumptions

Description	Unit	FY
Swimming Classes		
Opportunity costs (estimated hourly wages) per volunteer	US\$	\$5.73
Swim Instructors		
Average quit rate (i.e. rate at which swimming instructors quit occupation)		
Years 1-2	%	0%
Years 3-4	%	0%
Years 5+	%	0%
Estimated lifespan for income generation	Years	10
Average increase in annual income post-training	%	8%
Discount rate for NPV of future incomes	%	4%
Inflation rate	%	8%

Table 5: Soneva Eco Camp data indicators

Indicator	Unit	2019	2020	2021
Target population				
Location	Baa Atoll, Maldives			
Target population type	Children			
Total population of region	Number	13,856	13,856	13,856
Eco Camp programme				
Total number of children covered under programme	Number	103	218	320
Total number of schools in the region	Number	12	12	12
Number of schools covered under the programme in financial year	Number	1	2	7
Number of Soneva Eco Camps conducted annually	Number	1	5	7
Average number of students participating in each Eco Camp	Number	103	44	46

Table 5: Soneva Eco Camp data indicators

Indicator	Unit	2019	2020	2021
Cost of the programme				
Total number of personnel employed under programme in financial year	Number	4	3	2
Total work hours per programme for employed personnel in financial year	Number	128	30	20
Total CTC per personnel in financial year	US\$	\$1,688	\$480	\$320
Total fixed costs borne by Soneva in financial year	US\$	\$6,752	\$1,440	\$3,157
Total cost of programme design and management in financial year	US\$	\$0	\$0	\$0
Total cost of travel incurred by programme in financial year	US\$	\$0	\$765	\$0
Other variable costs (material, literature, etc.)	US\$	\$0	\$0	\$0
Total variable costs associated with programme in financial year	US\$	\$0	\$765	\$0
Opportunity costs associated with the programme				
Total number of volunteers associated with the programme	Number	30	16	7
Average hourly wage rate in region in financial year	US\$	\$5.73	\$5.73	\$5.73
Total number of hours under programme in financial year	Hours	945	11	43
Average opportunity cost of volunteering (based on forgone incomes) per volunteer for programme in financial year	US\$/person	\$5,415	\$64	\$246
Total opportunity cost of volunteering (based on forgone incomes) for programme in financial year	US\$	\$162,446	\$1,027	\$1,725

Economic Capital

Economic Capital uses the financial figures from Soneva's fiscal year and summarises three categories:

- Payroll
- Operational Expenditure
- Investments

Tax

Tax impact uses the financial figures from Soneva's fiscal year and summarises three categories:

- Property Tax
- People Tax
- Production Tax

Carbon Footprint Methodology

Carbon Survey

The management of our carbon footprint is a key component of our commitment. To identify where to invest in carbon reduction, Soneva conducts an annual *Carbon Survey*.

Each of our resorts has a designated sustainability officer who collects and reports performance data on all resort activities and equipment that emit greenhouse gases. In addition to monitoring our own emissions, we also collect data on emissions from activities that occur outside the resort property but which can be directly attributed to the activities of the resort – this includes emissions from the freight transport of goods and the air travel of our hosts and guests.

Scope

For our annual carbon survey we collect and report emissions data on activities in eight categories that collectively capture all the CO₂ emissions associated with Soneva resorts. These categories are: energy, air travel, ground travel, freight, food, paper, waste and water.

In order to meet international conventions on emissions reporting we further group these emissions into three baskets or 'scopes'. Each scope reflects how the emissions relate to the activities of the resort. Figure 1 provides a key for identifying how each category of emissions is grouped by scope.

Throughout this document we report emissions by both scope and the activity category responsible for the emissions.

Figure 1: The scope of our carbon footprint analysis

Scope 1 emissions encompass all of the greenhouse gas emissions that arise from sources that are owned by our resort and spa properties.

Scope 2 covers the emissions that result from the production of electricity that is imported into the resort from local electricity suppliers.

Scope 3 covers the emissions that occur as a consequence of the operation of the resort, but that occur from sources not owned or controlled by the resort.

What's included

- On-resort energy production

What's included

- Imported electricity

What's included

- Host and guest air travel
- Host and guest ground travel
- Sea, air and road freight
- Food
- Other, including waste, paper and water

Carbon Footprint Methodology

Carbon Footprint

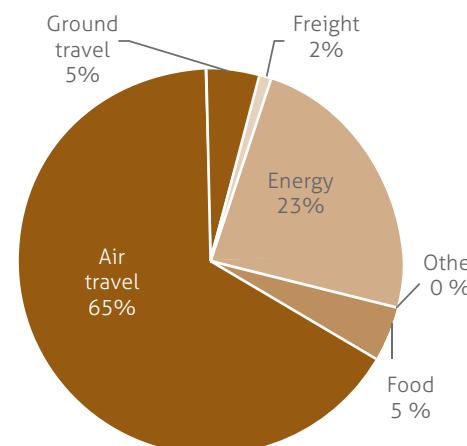
Soneva had a total carbon footprint for 2021 of 64,460 tonnes CO₂.

This represented an increase of 11% on the 2009 baseline figure of 58,044 tonnes CO₂.

Guest and host air travel emissions represent the vast majority of Soneva emissions with 65% of the total, while energy emissions are the second largest contributor to the overall footprint with 23% of measured emissions. Remaining emissions account for 12% of the total carbon footprint seen in Figure 2.

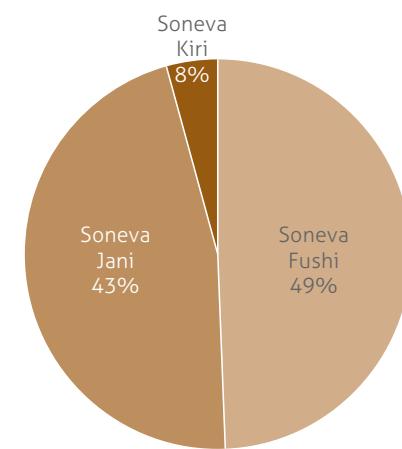
The distribution of the total emissions is 49% for Soneva Fushi, 43% for Soneva Jani and 8% for Soneva Kiri as seen in Figure 3.

Figure 2: Soneva emissions by source



Source: Soneva Carbon Calculator

Figure 3: Soneva emissions by resort



Source: Soneva Carbon Calculator

Table 1: Breakdown of 2018 emissions

Tonnes of CO ₂ unless otherwise stated	Scope 1	Scope 2	Scope 3								Totals		Per-resident-night		
			Air Travel	Ground Travel	Freight	Food	Waste	Paper	Water	Total emissions Scope 1&2	Total emissions Scope 1-3	Per-resident-night Scope 1&2 in kg	Per-resident-night Scope 1-3 in kg	Per-resident-night excl. air travel in kg	
Resort	Resort direct energy consumpt.	Electricity imports													
Soneva Fushi	6,159	0	21,497	1,624	754	1,462	-79	14	0	6,159	31,432	31	156	49	
Soneva Jani	5,997	0	19,291	1,160	497	1,165	-79	36	0	5,997	28,066	45	212	66	
Soneva Kiri	139	2,502	1,447	156	169	543	-4	9	0	2,642	4,962	29	54	39	
Soneva	12,296	2,502	21,921	2,939	1,420	3,170	-161	34	0	14,799	64,460	35	152	52	

Source: Soneva Carbon Calculator

Per-resident-night comparisons

Another useful approach for comparing the carbon footprints of each property is to interpret the emissions through a measure of 'per-unit' emissions such as per-guest-night or per-guest-stay. We use *per-resident-night*. This is defined as:

$$\frac{\text{Total carbon footprint}}{\text{Total guest nights} + \text{Total host nights}}$$

The reason for favouring a per-resident-night measure is that it is relatively effective at neutralizing the impact of changing occupancy or host levels on the overall emissions data. A per-resident-night approach also has an advantage over a per-guest-night perspective in that it neutralizes the impact of different resourcing policies and hosts residing on or off resort.

Table 1 provides a breakdown of emissions by source for each of the Soneva resorts. The columns on the right of the table illustrate the emissions per-resident-night for each property.

Soneva had a footprint of 152 kgs CO₂ per-resident-night in 2021. Excluding air travel the carbon footprint per-resident-night was 52 kgs CO₂.

Emissions reductions

Soneva increased its total carbon footprint by 11% against the baseline emissions of 2009. Most of these emissions increments were through higher energy consumption, largely reflecting a 43% increase in number of guest nights. A 26% increase in inventory with many larger villas also added to this. Furthermore, ground travel went up as a result of extra boat trips needed to conduct Covid-19 PCR tests.

On a per-resident-night basis emissions were down 3% compared to 2009. Excluding air travel, Soneva emissions increased by 31% on a per-resident-night basis. This largely reflects the Soneva Jani doubling its number of villas and Soneva Fushi adding larger villas as well as additional water villas.

Table 2: Change in emissions relative to 2009 base-year

% change relative to 2009	Scope 1	Scope 2	Scope 3							Totals		Per-resident-night		
Resort	Resort direct energy consumpt.	Electricity imports	Air Travel	Ground Travel	Freight	Food	Waste	Paper	Water	Total emissions Scope 1&2	Total emissions Scope 1-3	Per-resident-night Scope 1&2	Per-resident-night Scope 1-3	Per-resident-night excl. air travel
Soneva Fushi	+84%	±0%	+30%	+143%	+9%	+46%	-569%	+28%	±0%	+84%	+41%	+62%	+24%	+52%
Soneva Jani	+79%	±0%	+39%	+119%	+37%	+80%	+3%	+85%	±0%	+79%	+49%	+31%	+9%	+32%
Soneva Kiri	-95%	+100%	-89%	-51%	-11%	-32%	-59%	+22%	±0%	-95%	-71%	-3%	-69%	-11%
Soneva	+28%	+100%	-2%	+94%	+14%	+30%	-356%	-11%	±0%	+28%	+11%	+34%	-3%	+31%

Source: Soneva Carbon Calculator

Breakdown of 2021 emissions

Table 3: Breakdown of 2021 emissions

Scope	Source	Quantity	Unit	CO ₂ (kg/yr)	Percentage of total resort emissions
Scope 1 (Direct emissions)	Energy consumption				
	Charcoal	47,131	kg	109,203	0.17%
	Methanol	25,094	L	32,120	0.05%
	Kerosene	594	L	1,502	0.00%
	Diesel for power consumption	4,292,742	L	11,504,547	17.85%
Scope 2	Imported electricity from local electricity supplier	4,634,177	kWh	2,701,725	4.47%
	Air travel				
Scope 3 (Indirect emissions)	Long Haul International (>5,000km)	140,887,076	km	29,606,010	45.93%
	Medium Haul International (1,000-5,000km)	19,877,887	km	3,712,593	5.76%
	Short Haul International (<1,000km)	448,450	km	149,365	0.23%
	Private Jets			6,925,113	10.74%
	Jet Fuel (Seaplane)	728,028	L	1,841,910	2.86%
	Ground travel				
	Motorcycle/scooter	56,250	km	4,106	0.01%
	Diesel for transport	258,261	L	692,140	1.07%
	Gasoline for transport	968,967	L	2,243,160	3.48%
	Food				
	Non-vegetarian meals	1,462,939	Meals	2,560,143	3.97%
	Vegetarian meals	487,646	Meals	609,558	0.95%

Scope	Source	Quantity	Unit	CO ₂ (kg/yr)	Percent of total resort emissions
Scope 3 (Indirect emissions)	Freight				
	Air – Long Haul (>5,000km)	397,872	Tonnes km	171,010	0.27%
	Air – Medium Haul (1,000-5,000km)	751,219	Tonnes km	991,609	1.54%
	Air – Short Haul (<1,000km)	92,438	Tonnes km	238,723	0.37%
	Road	60,820	Tonnes km	7,481	0.01%
	Ship	863,966	Tonnes km	11,232	0.02%
	Paper				
	Office paper (0% recycled content)	10,695	kg	30,415	0.05%
	Office paper (100% recycled content)	8,314	kg	14,883	0.02%
	Toilet paper / tissue paper / serviettes	13,089	kg	13,089	0.02%
	Waste				
	Landfill – mixed solid waste	204,509	kg	24,541	0.04%
	Organics dumped at sea	11,536	kg	692	0.00%
	Biochar produced	12,808	kg	-6,404	-0.01%
	Recycled food scraps (organic)	386,572	kg	-46,389	-0.07%
	Recycled garden waste	426,211	kg	4,262	0.01%
	Recycled glass	73,170	kg	-6,585	-0.01%
	Recycled metal	36,176	kg	-52,093	-0.08%
	Recycled plastic	7,905	kg	-3,320	-0.01%
	Recycled paper	71,425	kg	-75,711	-0.12%
	Water				
	On-site desalination	257,212	m ³	0	0.00 %
	Rainwater collected	43,500	m ³	0	0.00 %
	Deep well	41,500	m ³	0	0.00 %
Total emissions for 2021				64,460,039	100%

Our methodology

The Soneva Carbon Footprint Report is modelled on the World Resources Institute / World Business Council for Sustainable Development (WRI/WBCSD) *Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, Revised Edition*.

The Soneva Carbon Calculator collects and analyses emissions data from Soneva resort and spa properties and this information is then reported in an annual Carbon Inventory Report for each property.

Our operational boundaries

Soneva's operational inventory follows the 'control' approach and includes carbon emissions from sources over which it has operational control.

The GHG Protocol identifies three Scope categories for common classification and comparison of resort emissions:

- Scope 1: Direct Carbon Emissions from sources that are owned by resort/spa
- Scope 2: Indirect Carbon Emissions from the generation of purchased electricity
- Scope 3: Indirect Carbon Emissions that occur as a consequence of the activities of the resort/spa, but occur from sources not owned or controlled by the resort/spa

According to the Greenhouse Gas Protocol, Scopes 1 and 2 must be included in any carbon footprint assessment. The inclusion of Scope 3 emissions is optional and Soneva has opted to include it in our Carbon Footprint analysis. Carbon dioxide (CO_2) is the primary greenhouse gas that is included in this inventory. Other gases, such as CH_4 and N_2O are more minor contribution sources based on Soneva's activities and are included as part of the CO_2 results.

Inclusions and exclusions

- Emission sources are identified with reference to the methodology described in the GHG Protocol and the ISO 14064-1 (2006) standard.
- Soneva accounts for all of its direct and indirect emissions and no emissions have been intentionally omitted from this report.

Good practice

A number of good practice guidance documents are used in the calculations of the Soneva Carbon Footprint Report. These include:

- Greenhouse Gas Protocol Corporate Standard
- Guidelines to DEFRA's GHG Conversion Factors: Methodology Paper for Transport Emission Factors (2008)
- Environmental Defense Paper Calculator
- US-EPA Solid Waste Management and Greenhouse Gases: A Life-Cycle

- Assessment of Emissions and Sinks
- US-EPA – Direct Emissions from Mobile Combustion Sources

Note that for ease of general interpretation we have adopted a convention of ignoring the equivalence "e" in our presentation of emissions and merely refer to CO_2 emissions.

Base year selection

In order to set a reduction target and to measure performance against that target, Soneva has set a base year which acts as a reference year against which to assess its progress reductions targets in the future years.

The base year has been established as the period January-December 2009. This period is in line with Soneva's financial year.

Data collection and quantification methodologies

Emissions factors

Each emissions source has an associated emissions factor which indicates the average emissions from the source relative to the intensity of that activity.

These emissions factors are used to derive estimates of greenhouse gas emissions based on the amount of fuel combusted on industrial production levels, distances travelled or similar activity data.

Emission factors assume a linear relation between the intensity of the activity and the emissions resulting from this activity.

Table 4 on page 109 details the sources of the relevant data and the emissions factors which have been used. The volume of CO_2 emissions has been calculated by multiplying the activity data from the resort by the relevant emissions factor.

Other assumptions

The following assumptions were made in calculating resort emissions:

- Flights: Precise routing is not known and estimated based on guest's country of residence. As a result, those flights are categorised as either short (<1,000 km), medium (1,001-5,000 km), or long (5,000 km+) haul. Distances are then estimated based on Soneva Flight Distance Calculator.
- Seaplane: Average occupancy assumed to be 15 passengers per flight (maximum capacity 16), in calculation of total flights from total passengers flown.
- Soneva Kiri plane: Emissions are calculated based on Jet A fuel consumption.

- Petrol: Assumed to be used exclusively for vehicles and so is classified as ground travel combustion, Scope 3. This includes company owned boats, which could have been put in Scope 1.
- Charcoal: Considered Residential/Commercial Coal with an emissions factor of 2.317 kg CO₂ / kg.
- Canned heat: Considered as methanol with an emissions factor of 1.28 kg CO₂ /L.
- Water desalination and pumping: Energy use is already included in energy figures so desalination and water pumping does not have a specific carbon impact.
- Laundry: All laundry energy and water is already included in energy and water figures.
- Freight: At present freight is measured from source port to resort, but no account has been taken of the transport of the product from its place of origin. Work to improve the measurement and reporting of emissions from freight is ongoing.
- Paper: Recycled paper is considered to be made of 100% recycled content. Non-recycled paper is considered to contain 0% recycled fibres.
- Food: Meals are estimated to be 25% vegetarian and 75% non-vegetarian. Each meal is estimated as an average composite meal with its carbon impact estimated using the low carbon diet calculator (<http://www.eatlowcarbon.org/Carbon-Calculator.html>).
- The emissions from the properties' Six Senses Spas are included in the Carbon Footprint Inventory.

Quality Assurance

The data provided by Soneva Fushi, Soneva Jani and Soneva Kiri presented in this report was obtained under the supervision of Soneva Social & Environment Conscience and is assumed to be accurate and complete.

In many instances accurate measures of emissions are not possible, and estimates have had to be made. Soneva continues to strive towards improving the accuracy of its measurement and reporting.



Table 4: Emissions factors used in estimating carbon footprint

Emission Source	Units	Emissions Factor	Factor Source
Energy			
Coal – residential/commercial (charcoal)	kg	2.317	California Climate Action Registry – General Reporting Protocol – v3. 1 Jan 2009
Methanol (canned heat)	L	1.28	EPA – Direct Emissions from Mobile Combustion Sources
Kerosene	L	2.53	EPA – Direct Emissions from Mobile Combustion Sources
Diesel	L	2.68	EPA – Direct Emissions from Mobile Combustion Sources
Liquefied petroleum gas (LPG)	kg	3.03	EPA – Direct Emissions from Mobile Combustion Sources
Imported electricity from Thailand electricity grid	kWh	0.583	US Department of Energy – Energy Information Administration
Air travel			
Long haul (>5,000km)	Tonnes km	0.1106 (0.211 with RFI of 1.9)*	DEFRA 2008. RFI DEFRA 2008
Medium haul (1,000-5,000km)	Tonnes km	0.0983 (0.187 with RFI of 1.9)*	DEFRA 2008. RFI DEFRA 2008
Short haul (<1,000km)	Tonnes km	0.1753 (0.331 with RFI of 1.9)*	DEFRA 2008. RFI DEFRA 2008
Jet fuel (own plane)	L	2.53	EPA – Direct Emissions from Mobile Combustion Sources
Ground Travel			
Motorbike – small (moped/scooter - approx 120 c.c.)	Km	0.073	carboncounted.com values
Diesel for transport	L	2.68	EPA – Direct Emissions from Mobile Combustion Sources
Petrol for transport	L	2.315	EPA – Direct Emissions from Mobile Combustion Sources
Freight			
Air – long haul (>5,000km)	Tonnes km	0.60	carboncounted.com values
Air – medium haul (1,000-5,000km)	Tonnes km	1.32	carboncounted.com values
Air – short haul (<1,000km)	Tonnes km	1.85	carboncounted.com values
Ship	Tonnes km	0.013	carboncounted.com values
Road: truck	Tonnes km	0.123	carboncounted.com values

* The Soneva Carbon Calculator includes a Radiative Forcing Indicator (RFI) to reflect the added global warming effect of greenhouse gases when emitted in the stratosphere.

Table 4: Emissions factors used in estimating carbon footprint

Emission Source	Units	Emissions Factor	Factor Source
Food			
Non-vegetarian meals	each	0.00175	Estimate based on low carbon diet calculator
Vegetarian meals	each	0.00125	Estimate based on low carbon diet calculator
Paper			
Office paper (0 % recycled content)	kg	2.844	Environmental Defence Fund Paper Calculator: papercalculator.org
Office paper (100 % recycled content)	kg	1.79	Environmental Defence Fund Paper Calculator: papercalculator.org
Toilet paper / tissue paper / serviettes	kg	1	Wuppertal Institute's MIPS data tables.
Waste			
Landfill – mixed solid waste	kg	0.12	EPA Solid Waste Management and Greenhouse – Sept 2006, Exhibit 8-6
Organics dumped at sea	kg	0.06	EPA Solid Waste Management and Greenhouse – Sept 2006, Exhibit 8-8
Biochar produced	kg	-0.6**	EPA Solid Waste Management and Greenhouse – Sept 2006, Exhibit 8-8
Recycled food scraps (organic)	kg	-0.12**	EPA Solid Waste Management and Greenhouse – Sept 2006, Exhibit 8-8
Recycled garden waste	kg	0.01	EPA Solid Waste Management and Greenhouse – Sept 2006, Exhibit 8-8
Recycled glass	kg	-0.09**	EPA Solid Waste Management and Greenhouse – Sept 2006, Exhibit 8-8
Recycled metal	kg	-1.44**	EPA Solid Waste Management and Greenhouse – Sept 2006, Exhibit 8-8
Recycled paper	kg	-1.06**	EPA Solid Waste Management and Greenhouse – Sept 2006, Exhibit 8-8
Recycled plastic	kg	-0.42**	EPA Solid Waste Management and Greenhouse – Sept 2006, Exhibit 8-8
Water			
Rainwater collected	m ³	0	carboncounted.com values
Deep well	m ³	0	carboncounted.com values
On-site desalination	m ³	0	carboncounted.com values

** Under the sign convention used in this report, the negative value indicates that emissions are improved as it represent the incremental change in GHG emissions involved in recycling or composting compared to landfill.



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