GREEN BUILDING COUNCIL FINLAND

BUILDINGLIFE PROGRAMME FOR CARBON NEUTRALITY IN THE BUILT ENVIRONMENT

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PREFACE

With IPCC's Sixth Assessment Report, the need for immediate climate action has become more apparent than ever. All we have is this decade to turn the direction of the world. The real estate and construction sector produces approximately one third of emissions in Finland, which means that the sector has a decisive role in combating climate change. It is absolutely necessary that each organization and individual recognizes their opportunities to influence the situation and takes action to reduce emissions. You do not have to do this alone or invent solutions by yourself. Everything you need is already available. Take action.

#BuildingLife

#BuildingLife is a joint project by ten European Green Building Councils, which highlights the built environment as a decisive part of the fight against climate change. With the project, companies in the built environment sector have considered the emissions produced by their activities in depth and shared information about solutions that could be used to reduce emissions in a sustainable manner. Each country produces an action program presenting the direction and processes that can be used by companies to reduce both the emissions from their own activities and those within their value chains on a larger scale. In Finland, the project includes dozens of companies that have a genuine need and desire to make the world a safer place to live in. During the project, we have heard innovative and well-informed views on the emission reduction potential, ranging from manufacturing plants in the building products industry to housing solutions and the infrastructure. Companies that support the programme commit themselves to the objectives of the plan and the implementation of the proposed measures such that the emissions produced by the real estate and construction sector in Finland reach carbon neutrality by the year 2035. A review of the current situation of the real estate and construction sector was published as part of the project, which included the best concrete examples of how environmental and climate work has already been put into action. The review is intended to motivate companies that have not begun their climate activities to think in concrete terms and realize that getting started is not actually as challenging as we might have thought. The publication looks further toward more ambitious targets. Toward concrete action.

SETTING THE DIRECTION, HELPING ALONG THE WAY.

Emissions are being reduced at an astonishing rate in the real estate and construction sector. New low-carbon solutions and operations models are being developed everywhere and new innovations are rapidly adopted by the masses. The real estate and construction sector is claiming a key role in the fight against climate change, and no one can afford to remain on the sidelines as the sector moves forward.

Remaining involved in the development of the sector and avoiding missteps will require an increasingly systematic approach and comprehensive utilization of existing information. Luckily, we do not have to invent all the tools ourselves.

At different stages, but heading toward the same goal

Each operator in the real estate and construction sector is at a different stage of their race toward carbon neutrality. Pioneers in the field are already thinking of ways to abandon compensation and to engage the entire value chain in the work toward carbon neutrality. At the same time however, some operators are losing resources due to tightening obligations and the evolving market situation, and thus the development of their own carbon neutrality activities still remains at the early stage. The development of the entire sector and the possibility to bring about actual change require that everyone is able to participate in the work and can find solutions for reducing emissions that work for them. The same tools will not work for everyone. We need a clear roadmap enabling sustained progress, which operators in the sector can follow together, supporting each other along the way.

Green Building Council Finland and #BuildingLife offer operators in the sector the opportunity to engage and influence, regardless of their starting point. We welcome everyone to expand their skill set and share their solutions.

Commit to carbon neutrality by 2035

We are inviting all organizations operating in the real estate and construction sector to support the #BuildingLife Programme for Carbon Neutrality in the Built Environment. Supporters of the programme commit to working toward a carbon neutral built environment by the year 2035 in accordance with the common goals of the real estate and construction sector. Supporters are committed to drawing up an action plan that they can use to develop their activities toward carbon neutrality.

Tell us about your work for carbon neutrality

We are inviting everyone to share their action plans with us, which we will publish under the #BuildingLife Programme for Carbon Neutrality in the Built Environment. The actual organization-specific action plans and road maps will provide examples for the application of the broader programme and encourage the entire sector to come up with their plans.

Components of a high-quality action plan for carbon neutrality:

- All emissions in Scopes 1, 2, and 3 as defined by the GHG protocol.
- Clear emission reduction goals and intermediate targets for different business units / functions.
- Targets and measures for transition toward a circular economy.
- Targets and measures for phasing-out fossil fuels.
- Clear-cut, measurable, and achievable targets for the next five years.
- Subsequent measures can be specified further in the future.

Pick up the pace

We are inviting private operators to set carbon neutral construction projects and the use of carbon neutral energy by the year 2030 as their objective. Join the international Net Zero Carbon Buildings Commitment. We are encouraging public operators to sign the LIFE Level(s) pledge and to begin using the following indicators included in the Level(s) framework as procurement criteria: Life-Cycle Assessment (LCA), Life-Cycle Costing (LCC), and Indoor Air Quality (IAQ).

Where to next?

1. Specify objectives that are in line with your activities and values.

- **Sign up as a supporter of the #BuildingLife Programme for Carbon Neutrality in the Built Environment.**
- Supporters of the programme commit to working toward a carbon neutral built environment by the year 2035 in accordance with the common goals of the real estate and construction sector. Supporters are committed to drawing up an action plan that they can use to develop their activities toward carbon neutrality.

2. Choose the pledges and frameworks you wish to commit to.

Private operators

- Sign the Net Zero Carbon Buildings Commitment – carbon neutral buildings by 2030.
- Make a commitment to a general accepted emissions reporting system, such as Science Based Targets.
- Sign the Sustainable Demolition Green Deal commitment to promote material efficiency in demolition work.

Public operators

- Sign the LIFE Level(s) pledge, use the Level(s) framework as procurement criteria.
- Sign the Emission-Free Worksites – Sustainable Procurement Green Deal for fossil-fuel-free worksites by the end of 2025.

3. Draw up your own action plan for carbon neutrality.

You can use the #BuildingLife Programme to help you identify the right measures.

4. Share examples of your work and encourage the entire sector to make genuine progress toward carbon neutrality.

5. Track and measure the emission trends of your activities and specify your objectives and action plan further where necessary.

Structure of the programme

THE FIRST SECTION PRESENT A TARGET FOR THE ENTIRE SECTOR: CARBON NEUTRAL BUILT ENVIRONMENT BY 2035. This section also describes the sub-objectives for concerning the emissions related to energy consumption, building materials, and worksite activities. As has often been said: "If it cannot be measured, it cannot be managed." The same goes for greenhouse gas emissions. Common goals motivate the entire sector to work together. In the context of climate work, even competitors can find themselves on the same side.

THE SECOND SECTION PRESENTS THE OPERATOR-SPECIFIC TABLES OF MEASURES. As each company engages in different activities, the emission reduction measures must also be different. In this publication, we present measures for eight different operator groups in the real estate and construction sector:

- Building products industry
- Construction companies
- Developers
- Infrastructure project clients
- Planners and other specialists
- Real estate investors
- Municipalities, cities, and other public operators
- Organizations

The tables of measures offer guidelines for the development of the operators' processes, but they do not provide strict instructions on how to adjust their business activities. This is a decision only the companies themselves can do. The tables of measures present years for the commencement and completion of each activity. However, the operators can adapt the provided timeframes in their own action plans to fit their specific needs and specify more ambitious targets as well. In the interest of the functionality of the business environment, it is essential to ensure that low-carbon services are available in the subcontractor and supplier chains and that the scheduling of the measures allows for this.

THE TIME HAS PASSED FOR GREENWASHING AND EMPTY WORDS

Better progress is required from the real estate and construction sector. Clients, investors, and end users demand that the built environment conforms to the principles of sustainable development, and the ever-tightening legislation in Finland and the European Union is pointing in the same direction. Our operating environment is ready for change. This change is not a threat but instead an opportunity for good, growing, and increasingly international business activities. A carbon neutral built environment is a complex and challenging objective that constantly requires new research data. But it is also the only direction we have, as this is the decisive decade. The objective must be divided into smaller components that can be implemented by each operator in the sector. These components can be found in the Programme for Carbon Neutrality in the Built Environment. The programme helps real estate and construction sector operators of all sizes to identify their own roles in bringing about a change in the sector. The programme provides guidelines for the development of the operators' activities, but the desire to change must be found within the organizations. They have to take the first steps and commit to a target. The first thing each company should do is to find out the sources of emissions for your activities.

We can do this

The real estate and construction sector has shown that it is capable of major change. Occupational safety and improved energy-efficiency became routine elements of construction projects in the 2000s. Now, we need an even more radical and faster change in terms of both attitudes and actions to achieve our objective of a carbon neutral built environment by the year 2035. All of us owners, decision-makers, specialists, and employees in the real estate and construction sector can make decisions within our own work that bring us closer to lower emissions without compromising on quality. No company can change the industry alone. A carbon neutral built environment means increased and improved cooperation between different operators. We must ask a lot from ourselves but also from our partners.

The time has passed for greenwashing and empty words. Now, it is time for practical action toward a carbon neutral built environment.

As signatories, we have already taken action and we want you to join our trailblazing team. The future is in our hands.

18 September 2021
#BuildingLife Ambassadors

Jan Herranen,
Maajohtaja, Rototec Oy
Kaisa-Reeta Koskinen,
Projektijohtaja, Hiilineutraali Helsinki
Panu Pasanen,
Toimitusjohtaja, One Click LCA Ltd
Jyrki Keinänen,
Toimitusjohtaja, A-Insinöörit Oy
Olli Nikula,
Toimitusjohtaja, Saint-Gobain Finland Oy
Juha Kostiainen,
Johtaja, Kaupunkikehitys, YIT Oyj
Tuomas Särkilahti,
Toimitusjohtaja, Skanska Oy
Ilkka Tomperi,
Johtaja, Kiinteistöt, YIT Oyj
Ville Reinikainen,
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Saara Vauramo,
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Karla Lindahl,
Toimitusjohtaja, KONE Oy Suomi ja Baltia
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Laura Inha,
Kehityspäällikkö, Kestävä Tampere 2030
Juha Rämö,
Teknologiajohtaja, Consolis Parma
Riku Patokoski,
Toimitusjohtaja, Bonava Suomi Oy
Topi Paananen,
Toimitusjohtaja, Peikko Group Oy
Niina Nurminen,
Rakennuttajapäällikkö, Keskinäinen Eläkevakuutusyhtiö Ilmarinen
Pasi Suutari, *Kiinteistöjohtaja, SOK*

SUPPORTERS

As supporters of the programme of the #BuildingLife project, we commit ourselves to working toward a carbon neutral built environment by the year 2035 in accordance with the common goals of the real estate and construction sector.

We also commit ourselves to drawing up our own action plan, which we will use to develop our business activities toward carbon neutrality.

Our group of supporters continues to grow - you can see all supporters and their roadmaps on our site figbc.fi/buildinglife..

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CHANGE REQUIRED IN THE SECTOR

For carbon neutrality to become a reality, the real estate and construction sector requires deep, systemic change. Business models and approaches must be thoroughly transformed. To allow companies to adjust their activities, we need a favorable operating environment. In this chart, we will present the steps toward carbon neutrality divided into subject areas. Key operators for bringing about change are also presented for each subject area. We can only change the future together.

	-2023	-2025	-2030	-2035
Emission control for organizations (Applies to all operators.)	Emission control must start with an assessment of the emissions of your value chain. Organizations assess the emissions of their value chain in accordance with the GHG protocol including all three Scopes.	It is essential for the credibility of the objectives to ensure that emissions are reported through a process overseen by a third party. Organizations commit to reporting their emissions on an annual basis.	The realization of emission reduction targets is monitored annually, and planned measures are specified further where necessary.	Toward the midpoint of the 2030s, organizations have eliminated the majority of their emissions and identified areas where the reduction of emissions is difficult. Organizations utilize emission compensation systems to achieve carbon neutrality.
	Emission reduction targets and measures are specific to each organization. Each organization must prepare their own concrete steps for reducing emissions.	Organization-specific benchmarks are determined for construction projects, which can be used to set project-specific objectives.	Organizations require their stakeholder groups to commit to the same objectives, as the emission reduction targets for a value chain cannot be achieved alone.	The vision for the future includes achieving carbon positivity. How could business activities be developed toward an increasingly ecological direction?
Training and communications (Applies to all operators.)	Competence must be increased extensively throughout the sector. Occupational safety programs can be used as an example. Organizations draw up competence requirements for different roles and prepare training programs that allow those requirements to be fulfilled.	For the projects, it is important to ensure that key stakeholders are able to interpret carbon footprint calculations and environmental product declarations.	Organizations engage their stakeholder groups to participate in the emission reduction work. Training opportunities are also offered to the subcontracting chain and suppliers.	Organizations determine whether they need compensation to achieve carbon neutrality and communicate openly on the subject.
	Organizations are comprehensively included in climate work. Motivated personnel are identified in each business unit, and the activities are mobilized through the identified personnel in the business units.	Climate objectives are reflected in performance bonus systems and development targets. Development of emission reduction solutions is rewarded by organizations.	International cooperation is increased. Larger organizations introduce best practices from other countries.	The carbon footprint of products is communicated to the customers in the context of letting or real estate transactions.
	Organizations communicate on their emission reduction targets and measures. Operators exchange information freely and participate in joint development projects, such as the #BuildingLife project.	Challenges are also discussed. Other operators in the sector are also included in finding solutions to challenges.		
Zoning and urban planning (Cities and municipalities)	Cities and municipalities can keep emissions from construction in check by directing construction toward areas with existing infrastructure and suitable ground conditions for construction.	Cities and municipalities aim to minimize construction on undeveloped land and increase green infrastructure.	In zoning, the requirements of energy transition are taken into account by ensuring sufficient space for the storage of energy.	Simulation is introduced to support zoning. The best typology is determined for each plot, taking into account the existing infrastructure, green areas, and ground conditions.
	In zoning, particularly low-carbon solutions are required for plots that are in higher demand. Particularly low-carbon solutions are required in the conveyance of plots and design competitions.	In design competitions, cities require the utilization of circular economy and adapting to climate change.	Cities only grow larger through stacking and changes in land use have been brought to equilibrium.	

	-2023	-2025	-2030	-2035
Emission control for projects (Developers, construction companies, and consultants)	Carbon footprint management is made part of all housing construction projects. Benchmarks are specified for projects to allow for the assessment of emission reduction measures. Carbon footprint assessment is becoming more common in the sector and more specialists are required each year. The assessment of the carbon footprint of structures begins in infrastructure projects. Common rules for the emission control of projects are outlined.	Companies set their own limit values for different project types and the life-cycle emissions of housing construction projects have been reduced by 15 percent. As legislation enters into force, carbon footprint assessments become increasingly common, and the number of specialists continues to grow. First infrastructure projects are being assessed using the common method in the project planning stage. Emission reduction method are outlined, and benchmarks set for project types.	The life-cycle carbon footprint of housing construction projects has been significantly reduced. Pioneers are planning the first carbon neutral projects. Emission control of infrastructure projects has become an established practice in both the project planning stage and further planning. Emissions of infrastructure projects have begun to fall.	First carbon neutral housing construction projects are being built. The life-cycle emissions of housing construction projects have been reduced by 70 percent. Emissions of infrastructure projects are reduced strategically. Green infrastructure and other forms of carbon sequestration are implemented in projects.
Materials and building products (Suppliers of materials)	Manufacturing plants draw up their own emission reduction plans that take into account energy-efficiency, environmental material flows, and production processes. Environmental Product Declarations (EPD) are prepared for high emission products in particular. The recycling potential of products is investigated. Recycling instructions are prepared for products that can be recycled. Circular economy is introduced as a principle of product development.	The use of fossil energy at manufacturing plants is reduced. EPDs are prepared for 40 percent of the product portfolio. Make sure that 20 percent of products can be recycled. Prepare recycling instructions for the products.	Supply of renewable energy for manufacturing plants is ensured through Power Purchase Agreements (PPA). EPDs are prepared for 70 percent of the product portfolio. Make sure that 50 percent of products can be recycled. Prepare recycling instructions for the products.	No fossil energy is used at manufacturing plants. EPDs are prepared for 100 percent of the product portfolio. Make sure that 75 percent of products can be recycled. Prepare recycling instructions for the products.
Emission control for worksites (Construction companies, developers)	Operators commit to the Green Deal for Emission-Free Worksites. The calculation of the worksite carbon footprint is assessed to ensure that it also includes any demolition and excavation work carried out at the site. Only renewable electricity is used at worksites and possible sources of renewable thermal energy are investigated.	Worksite generators use renewable fuels wherever possible. Modernization of equipment and the development of existing equipment is discussed with equipment rental partners.	Make sure that the charging infrastructure of worksites also supports the needs of subcontractors. Generators powered by fossil fuels are phased out at worksites.	Use only renewable delivered energy in production. Support the modernization of equipment by your partners and the product development of equipment manufacturers by proposing pilot projects and partnership models.
Energy efficiency (Real estate investors, developers)	Emissions from the energy consumption of existing property stock are well known. Energy audits are carried out and plans prepared at properties to improve efficiency. Organizations set objectives for the energy-efficiency and emissions of their property stock.	Energy-efficiency is improved systematically in all property types. Local production of renewable energy for properties is investigated. Electricity purchase agreements largely pertain to fossil-free sources. Property owners negotiate advantageous agreements for the tenants as well. The option to purchase renewable district heat becomes available in the first municipalities.	Energy-efficiency has reached its highest level. Renewable energy is widely produced at properties. The largest sites also include options for energy storage. The quantity of purchased renewable electricity is increased through PPAs. Fossil-free district heat can be purchased in most municipalities.	The properties use fossil-free and mainly renewable energy. A significant amount of energy is produced within the property stock, which is recycled effectively. District heat is fossil-free throughout the country.

CARBON NEUTRAL BUILT ENVIRONMENT BY 2035

The objective of this programme is to determine steps for each operator in the sector, which would combine to ensure that the real estate and construction sector in Finland becomes carbon neutral by the year 2035.

In expert groups open to all operators, we have come to the following conclusion: the amount of energy required and the related emissions must be reduced further to almost nothing. But this alone will not suffice. Determined action to reduce the emissions related to building materials and worksites by at least one half is also needed.

The real estate and construction sector has a decisive role in fighting climate change

With the recent report from IPCC, the need for immediate climate action has become more apparent than ever. All we have is this decade to turn the direction of the world.

The European Union is seeking to reduce emissions by 55 percent by the year 2030 and carbon neutrality by 2050. The recommendations of the Finnish Climate Change Panel for emission reduction are 60 percent by 2030 and 70 percent by 2035, by which point the entire country should also be carbon neutral. The emissions from 1990 are used as the reference level for emission reduction. The remaining 30 percent is expected to be equal to the carbon sink comprised by forests at that time, which would mean that we had reach equilibrium or neutrality.

As operators in the real estate and construction sector, we produce approximately one third of the emissions in Finland, so the objectives we set ourselves are not insignificant. We are reaching the final moments to ask ourselves whether we are going to be part of the solution or the problem?

The Finnish real estate and construction sector must become carbon neutral at the same pace as the State by 2035. The measures presented in this programme allow us to reach that goal.

What emissions should be reduced and by how much?

The objectives described below have been discussed with specialists in the field during different stages of the #BuildingLife project. They have been commented on by more than ninety specialists in workshops and dozens more through a survey.

After the workshops and surveys, we have interviewed top scientist in the field in assessing the achievement of the objectives. The opinion of the sector is unanimous: The Finnish real estate and construction sector wants to be at least as ambitious as the Finnish Government. It only remains for us to identify the best measures to realize this ambition.

According to the low-carbon roadmap for the construction industry produced by the Confederation of Finnish Construction Industries RT, three quarters of the emissions related to the built environment are produced by the consumption of energy by existing buildings, and the remaining fourth by building materials,

worksite activities, and transportation. In the pursuit of carbon neutrality, all three require investment. The emission trends related to energy consumption are largely dependent on the action taken by energy companies. According to the updated estimate of Finnish Energy from 2021, emissions related to district heat will be reduced by 80–90 percent by 2035. Thus, the role of the real estate and construction sector will consist of improving the energy-efficiency of existing properties by optimizing their use and carrying out energy renovations. Various PPA schemes where commitments are made to purchase clean energy in the longer term are also an effective way for operators in the real estate industry to support the increase in clean energy sources. While the consumption of energy by each property or the production of each power plant may not be carbon neutral by 2035, it would seem at this point that we are getting close. **EMISSIONS FROM ENERGY CONSUMPTION MUST BE REDUCED AT THE SAME PACE WITH THE ENERGY INDUSTRY BY AT LEAST 90 PERCENT BY THE YEAR 2035.**

The methods and materials used for construction comprise the core issue under the responsibility and authority of the real estate and construction sector. The amount and type of the cement and steel products we use in the future will be decisive in the reduction of emissions from building products. Although hydrogen-reduced steel is already available and various carbon capture methods are developing further, we cannot wait for the wider commercialization of these solutions if we want to achieve carbon neutrality by 2035.

Pioneers in the field are already showing us that the halving of emissions from building products is not only possible but also seen as a good business opportunity. **EMISSIONS FROM THE MANUFACTURING OF BUILDING PRODUCTS MUST BE REDUCED BY 50 PERCENT BY THE YEAR 2035.**

A third part of the equation consists of the emissions from worksites and transportation, where the development goes hand in hand with electrification and renewable fuels. Transitioning to low-emission fuels will most likely be the most significant act of the coming years, but it is only an intermediate step on our way toward an electric society. The necessary changes will be easier to implement on smaller housing construction sites and in light transport, whereas doing the same will take more time with heavier transport and larger worksites. **EMISSIONS FROM WORKSITES AND TRANSPORTATION MUST BE REDUCED BY 50 PERCENT BY THE YEAR 2035.**

Formula for carbon neutral built environment

A carbon neutral built environment refers to a situation where the annual emissions and positive climate effect of the built environment are in balance.

The total reduction in emissions from the built environment in accordance with the targets described above amounts to 80% by the 2035.

By using the emission breakdown presented in the RT roadmap (energy consumption 75%, materials, worksites, and transportation 25%) and the emission reduction targets provided in the previous chapter, we can easily calculate the total impact of the emissions reductions with the following formula: 75% * 90% + 25% * 50% = 80%75 % * 90 % + 25 % * 50 % = 80 %

As the year 2035 is, however, in the distant future, we need clear intermediate targets for the reduction of emissions. The activities specified for different organization types in this programme are used to pursue the emission reduction path presented in the below chart.

It is assumed that the easiest and most significant emission reduction measures will be carried out in this decade, which is why the most significant emission reduction targets are also scheduled for the 2030s. After the initial surge in emission reductions, the pace will slow down slightly at first, picking up with technological advancements later on in the 2030s.

Intermediate targets for reducing the emissions of the build environment described for target years 2025, 2030, and 2035.

Year	2025	2030	2035
Emission reductions	Material-related emissions reduced by 25 percent. Worksite emissions reduced by 25 percent. Emissions from the energy consumption of existing building stock reduced by 40 percent.	Material-related emissions reduced by 40 percent. Worksite emissions reduced by 40 percent. Emissions from the energy consumption of existing building stock reduced by 70 percent.	Material-related emissions reduced by 50 percent. Worksite emissions reduced by 50 percent. Emissions related to energy consumption reduced by 90 percent.
Reaching equilibrium	The first projects that are carbon neutral throughout their life-cycle.	The energy consumed by properties of professional owners of real estate is carbon neutral.	New building projects are carbon neutral.

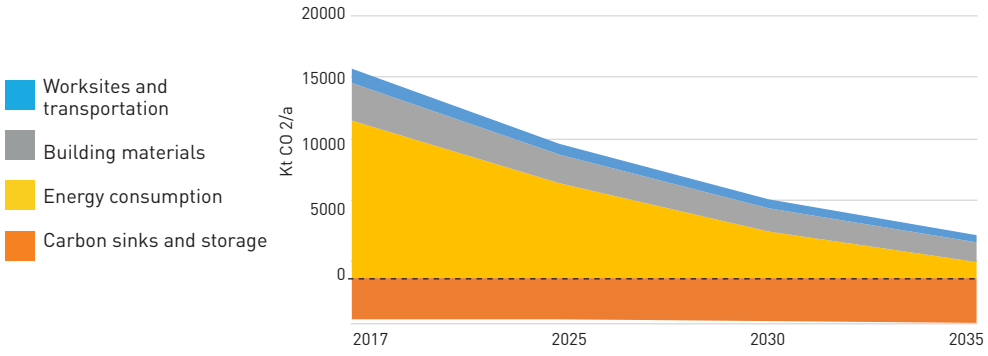
Carbon neutrality cannot be achieved without positive climate impacts

In the pursuit of a carbon neutral built environment, the reduction of emissions by 80 percent alone is not sufficient. We will also need positive impacts each year, and they must be equal to the amount of emissions produced.

One of these impacts is the carbon storage in long-lived wood products included in the LULUCF calculations as well, which refers to the annual difference between new wood products and decommissioned wood products. This represents the increase in carbon storage in wood products. In 2017, the figure corresponded to approximately 19 percent of the annual emissions of the built environment, but it does of course comprise the carbon storage for wood products used in other sectors as well.

The carbonation of concrete from demolished buildings, renewable energy supplied to the network, or carbon sinks resulting from the creation of green spaces could also be included in the positive environmental impacts. The programme also presents measures for increasing these positive impacts, but the assessment of their effectiveness will require further investigation. In terms of magnitude, these positive impacts represent approximately 20 percent of the current greenhouse gas emissions of the built environment. These impacts must be reinforced and maintained alongside the emission reduction measures to achieve carbon neutrality.

Reduction in the emissions of the built environment and the increase in positive impacts described for target years 2025, 2030, and 2035.



TABLES OF MEASURES

In this chapter, we present measures for eight different operator groups in the real estate and construction sector:

- Building products industry
- Construction companies
- Developers
- Infrastructure project clients
- Planners and other specialists
- Real estate investors
- Municipalities, cities, and other public operators
- Organizations

The tables of measures offer guidelines for the development of the operators' processes, but they do not provide strict instructions on how to adjust their business activities. This is a decision only the companies themselves can do.

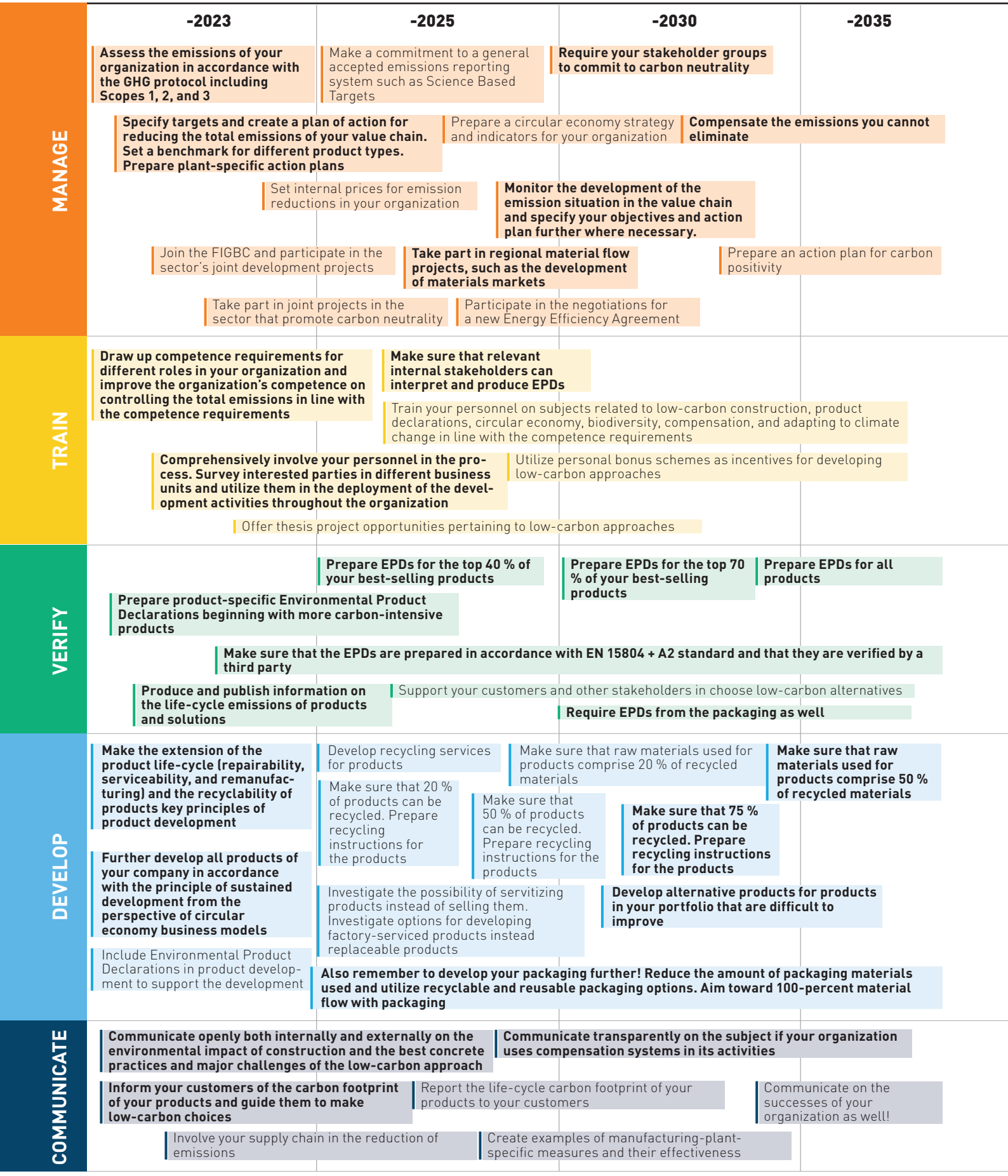
Instructions for reading the tables of measures

The tables include the key measures each group of operators can influence. The measures are divided under the headings of "Development of Organization" and "Development of Production."

Development of Organization is aimed at improving management, competence, and communications in your organization. In turn, Development of Production aims to reduce the emissions of each individual construction project or manufacturing plant. The tables of measures present years for the commencement and completion of each measure. However, the operators can adapt the provided timeframes in their own activities to correspond to their specific needs as well as specify more ambitious targets.

BUILDING PRODUCTS INDUSTRY

Organizational developments



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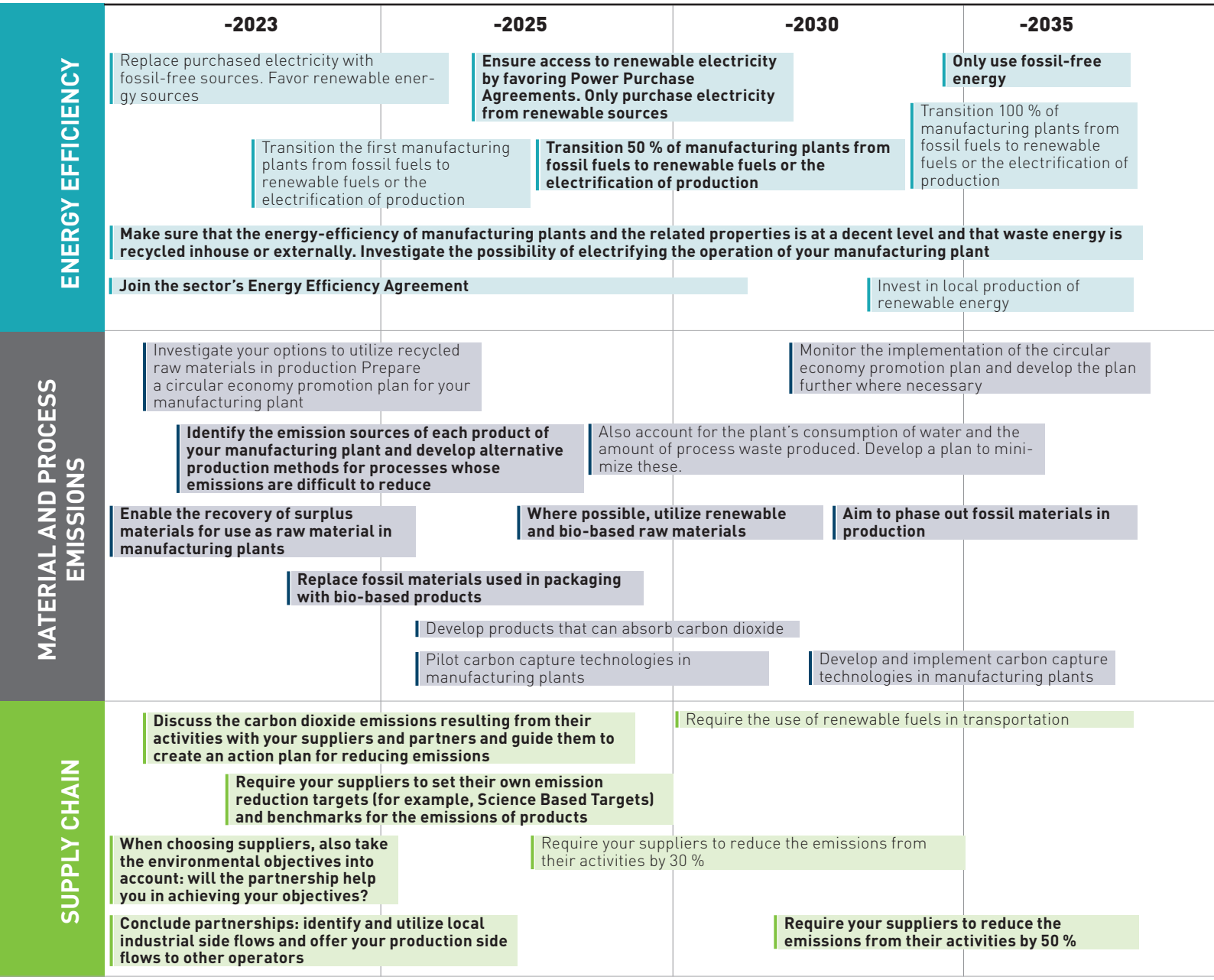
The building products industry has a major responsibility in the emission reduction work of the sector. Low-carbon buildings cannot be built without low-carbon products.

In recent years, we have observed a significant turning point in the sector with suppliers introducing more and more innovative products to the market, which have been manufactured taking into account the energy consumption of manufacturing plants, origin of materials, and recyclability in the future.

In order to achieve their objective, material suppliers must prepare a plan for each manufacturing plant. The corrective measures vary significantly, but the goal remains the same: the emissions from manufacturing must be halved without compromising on technical characteristics.

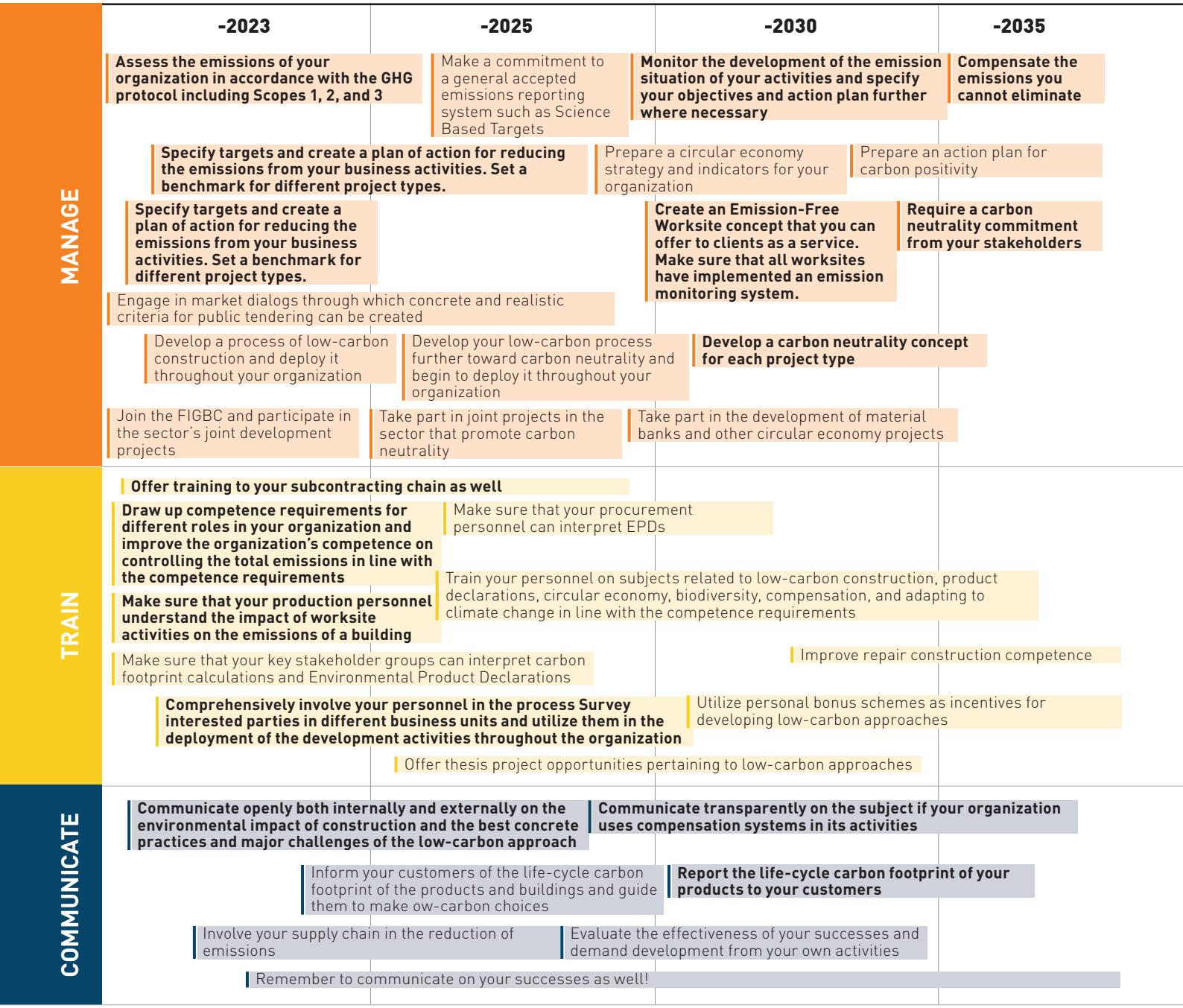
Manufacturing-plant-specific measures



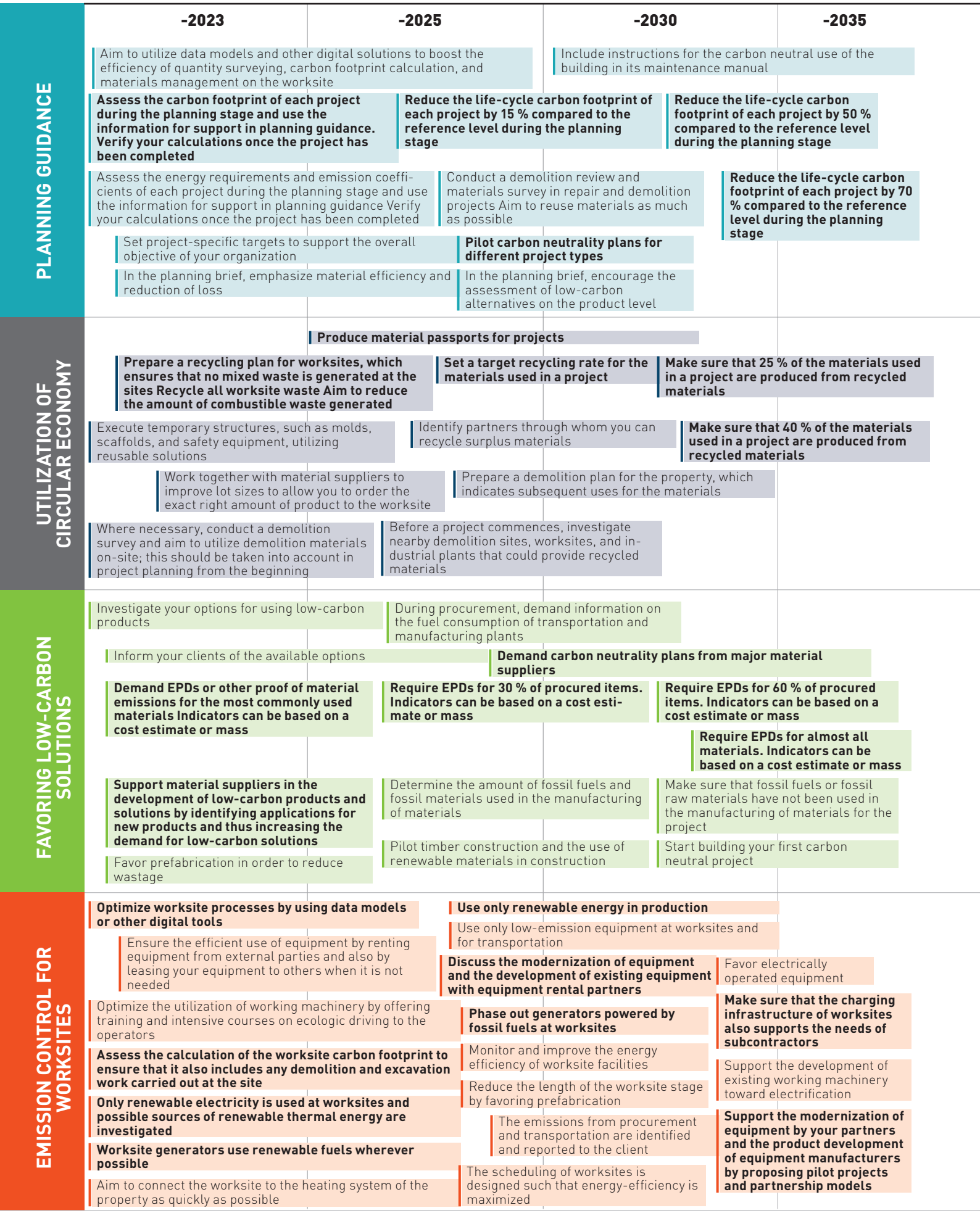
CONSTRUCTION COMPANIES

The emissions from the activities of construction companies comprise worksite activities and transportation. The electrification of worksites requires persistent work and novel innovations. However, construction companies can also influence the products they build. They can function as experts on the impact of construction and material choices on climate change toward the clients

Organizational developments



Production measures



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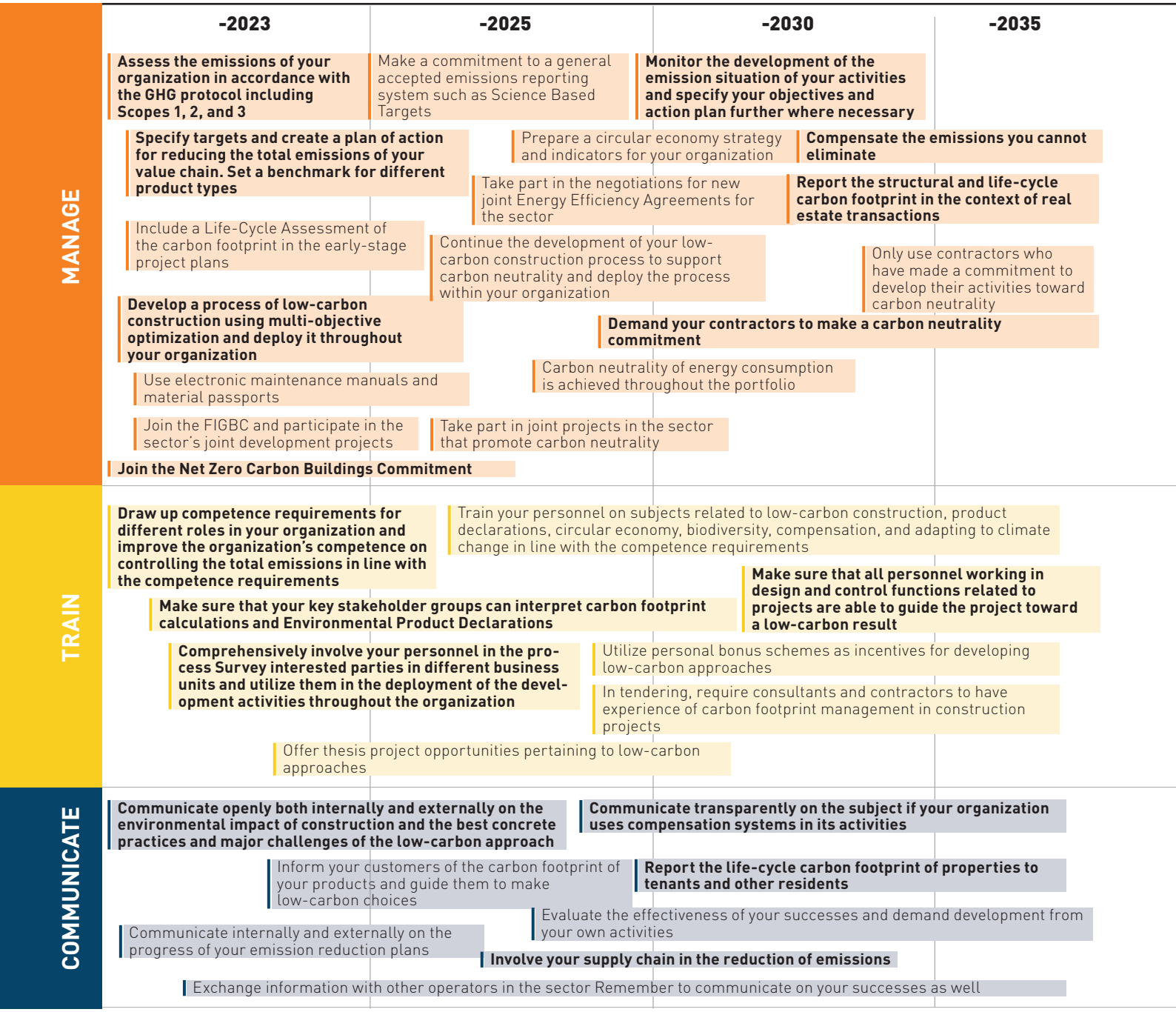
DEVELOPERS

Developers have influence over everything during the construction stage. Due to their comprehensive outlook and influence, developers can ensure that low-carbon objectives are made part of the project from the very beginning. The guidance process emulates cost control.

When the reduction of carbon footprint is made a priority from the very beginning of a project, positive impacts can be achieved without sacrificing the project's other objectives.

Organizational developments



Production measures

PLANNING GUIDANCE

-2023

- **Assess whether customer value could be created without new construction. Can the service be provided within an existing property?**
- **Set project-specific targets to support the overall objective of your organization**
- **Assess the carbon footprint of each project during the planning stage and use the information for support in planning guidance. Verify your calculations once the project has been completed**
- Assess the energy requirements and emission coefficients of each project during the planning stage and use the information for support in planning guidance Verify your calculations once the project has been completed
- **Designate a carbon footprint specialist for the project from within or outside of the organization**
- Demand detailed ground surveys at the early stage of project planning
- **In repair and demolition projects, carry out a materials survey and aim to reuse as much of the materials as possible**
- In the planning brief, emphasize material efficiency and reduction of loss. In the planning brief, encourage the assessment of low-carbon alternatives on the solution and product level

-2025

- **Prepare a carbon neutrality plan for each project and assess the cost impact**
- **Reduce the life-cycle carbon footprint of each project by 15 % compared to the reference level during the planning stage**
- Evaluate possibilities of using renewable and carbon-binding materials
- Survey the utilization of all roof areas for energy production, rainwater management, or urban greening
- Designate a structure technical specialist for the project to supervise the resource-efficiency of the plans
- Conduct ground surveys before project planning or preferably before the acquisition of land to ensure that the plot can be used for a low-carbon construction project
- **Prepare demolition and reuse plans for all new construction projects**
- **Make sure that the intended use of each project can be altered where necessary**
- Prepare plans for the alteration of the intended use for parking solutions

-2030

- **Reduce the life-cycle carbon footprint of each project by 50 % compared to the reference level during the planning stage**
- Include instructions for the carbon neutral use of the building in its maintenance manual
- Prepare a report of the project's adaptability to climate change

-2035

- **Reduce the life-cycle carbon footprint of each project by 70 % compared to the reference level during the planning stage**

UTILIZATION OF CIRCULAR ECONOMY

- Implement sharing economy solutions in projects, including car sharing and communal tools
- **Where necessary, perform a demolition survey and aim to utilize the demolition materials on-site; this should be taken into account in project planning from the beginning**
- Before a project commences, investigate nearby demolition sites, worksites, and industrial plants that could provide recycled materials
- **Prepare a demolition plan for the property, which indicates possible further and subsequent uses for the materials and structures**
- **Specify sorting targets for worksites**
- **Specify a target recycling rate for the project**
- **Make sure that 25 % of the materials used in a project are produced from recycled materials**
- **Make sure that 40 % of the materials used in a project are produced from recycled materials**
- **Join the Sustainable Demolition Green Deal commitment**

FAVORING LOW-CARBON SOLUTIONS

- **Require EPDs for the largest materials**
- **Require EPDs for 40 % of procured items**
- **Require EPDs for 60 % of procured items**
- **Require EPDs for all materials**
- Investigate your options for using low-carbon products
- Pilot timber construction and the use other renewable materials in construction
- Utilize hybrid construction solutions in projects
- **Encourage proposals for low-carbon planning and implementation solutions**
- **Support material suppliers in the development of low-carbon products and solutions by identifying applications for new products and thus increasing the demand for low-carbon solutions**
- **Make sure that fossil fuels or fossil raw materials have not been used in the manufacturing of materials for the project**
- Investigate possibilities for using locally produced energy in projects
- **Utilize trans-seasonal storage in all projects**
- Investigate the possibilities for trans-seasonal storage in projects
- Produce energy locally in all projects
- Energy for new projects is only purchased from renewable sources
- **Investigate possibilities for using locally produced energy in projects**
- If parking solutions are included in the plans of a project, make sure to include options for charging electric vehicles
- **Negotiate a purchase agreement for renewable energy with the energy company, which can be utilized by the residents and users as they wish**
- **Start building your first carbon neutral project**

CONTRACTOR COOPERATION

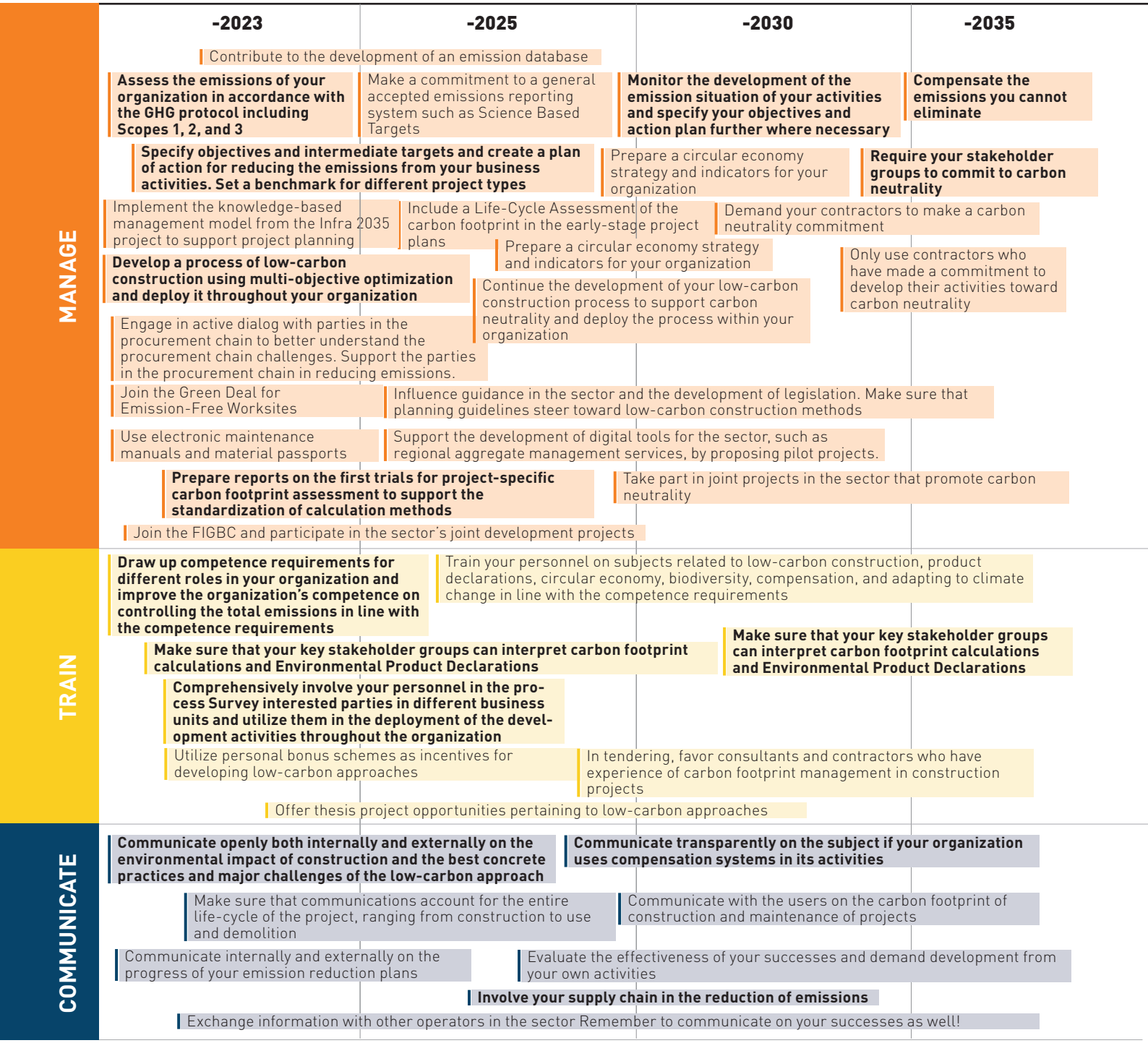
- Specify limit values for waste material before the contract
- Determine the structures that are most significant in terms of the emissions of the project and investigate low-carbon alternatives
- **Demand that life-cycle emission calculations are updated during large-scale procurement. Include emissions calculations in monthly reporting**
- **Assess the calculation of the worksite carbon footprint to ensure that it also includes any demolition and excavation work carried out at the site**
- Demand carbon neutrality throughout the life-cycle from new projects
- Implement consistent procurement criteria for major product groups
- Demand emission reduction strategies and measures from contractors
- Extend the planned useful life by preparing plans for adaptability and alteration of intended use
- **Include the entire production chain in the reduction of emissions**
- Support the modernization of equipment by your partners and the product development of equipment manufacturers by proposing pilot projects and partnership models
- **Create contract forms that support the contractors and planner in innovating new means of reducing emissions**
- Aim to design the scheduling of worksites such that energy-efficiency is maximized

CLIENT ORGANIZATIONS IN INFRASTRUCTURE PROJECTS

Infrastructure projects are typically long-term projects with substantial emissions. Functional infrastructure is however necessary for the creation of a low-carbon society.

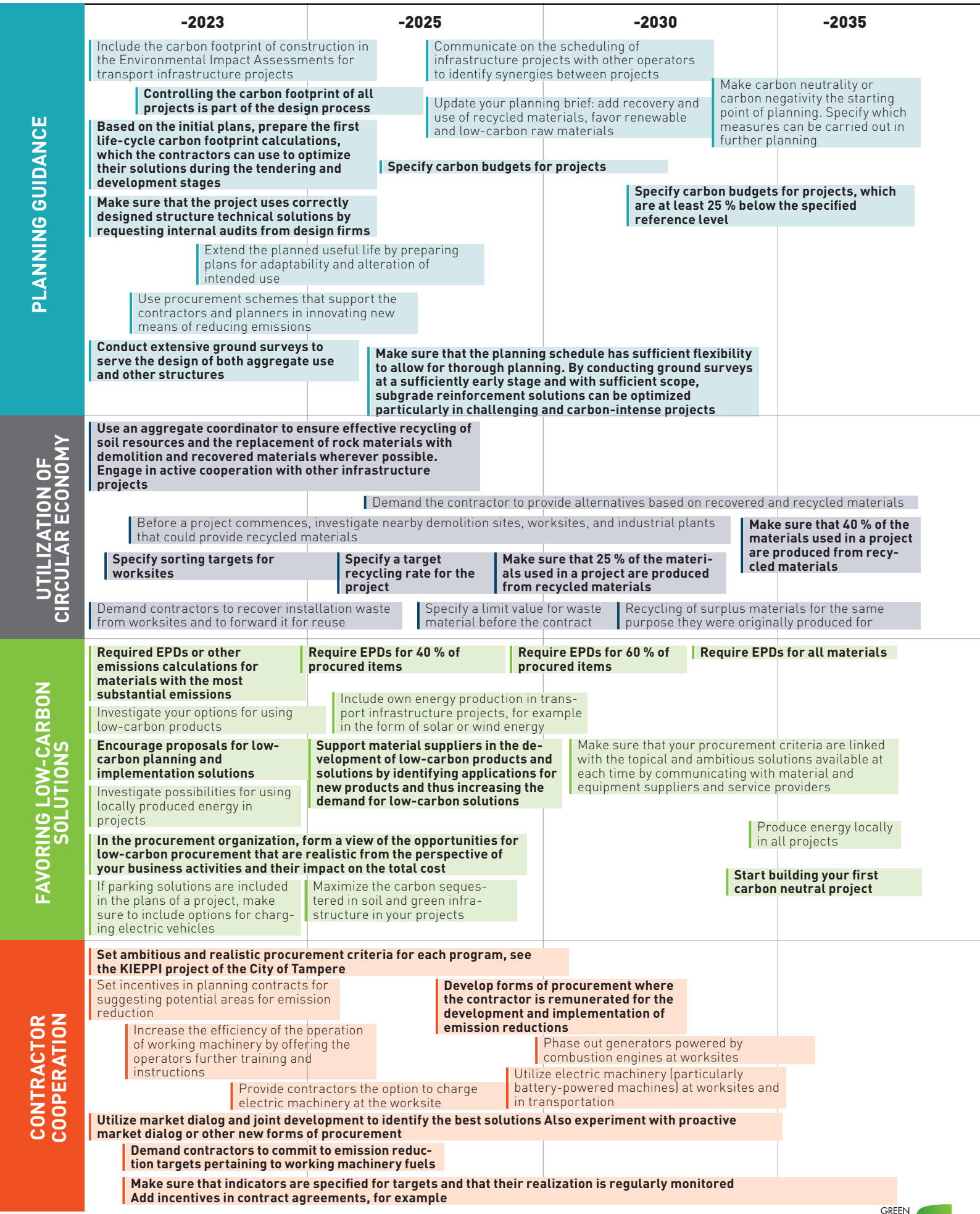
The clients in infrastructure projects can hasten the low-carbonization of the sector significantly through their actions. Emissions during the construction stage can be reduced in all projects without sacrificing the quality of the results. Clients can also influence the use of infrastructure through information steering. More information about the execution of sustainable infrastructure projects can be found in the Sustainable Infrastructure specification published by FIGBC

Organizational developments



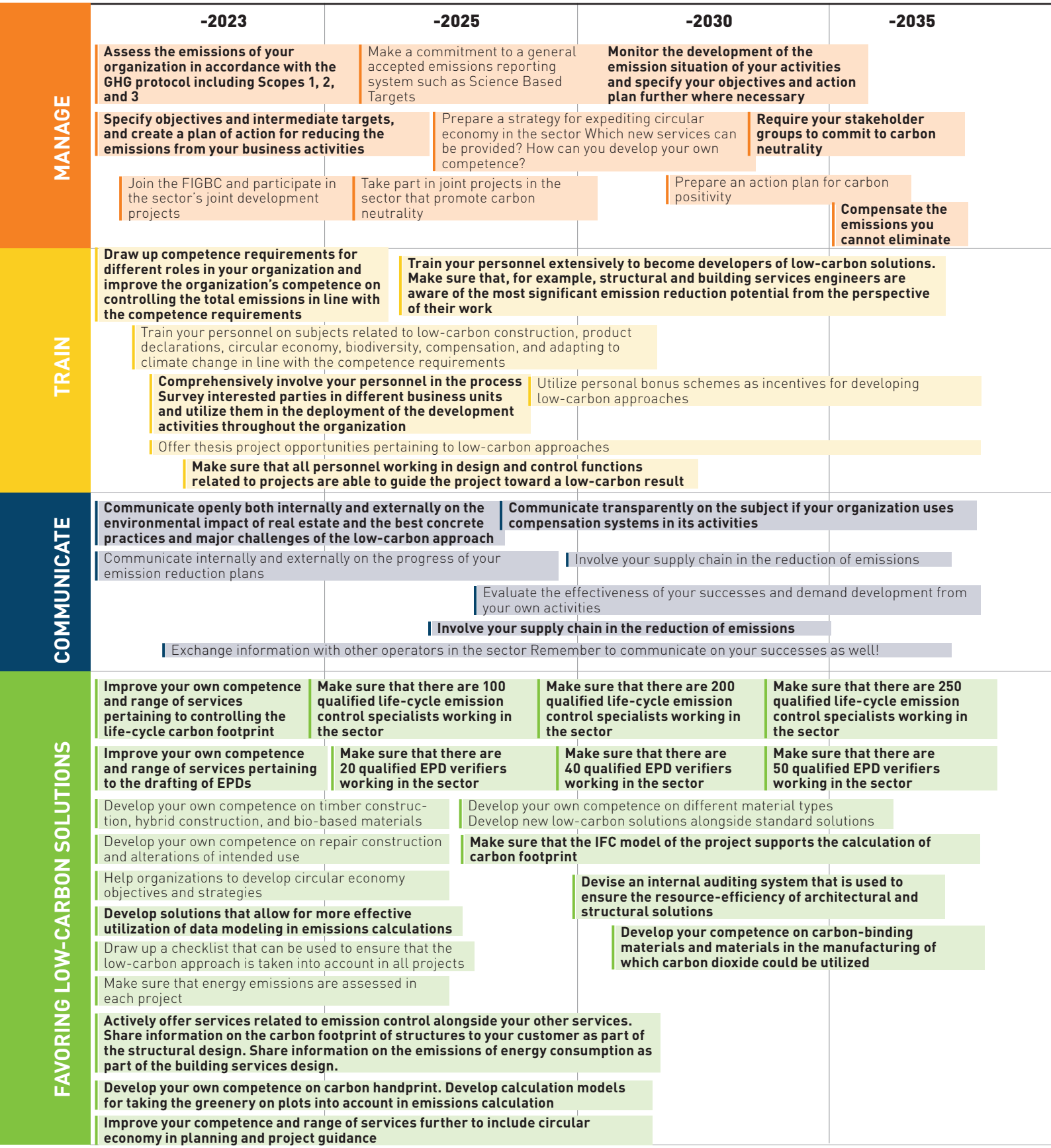
GREEN BUILDING COUNCIL FINLAND

Production measures



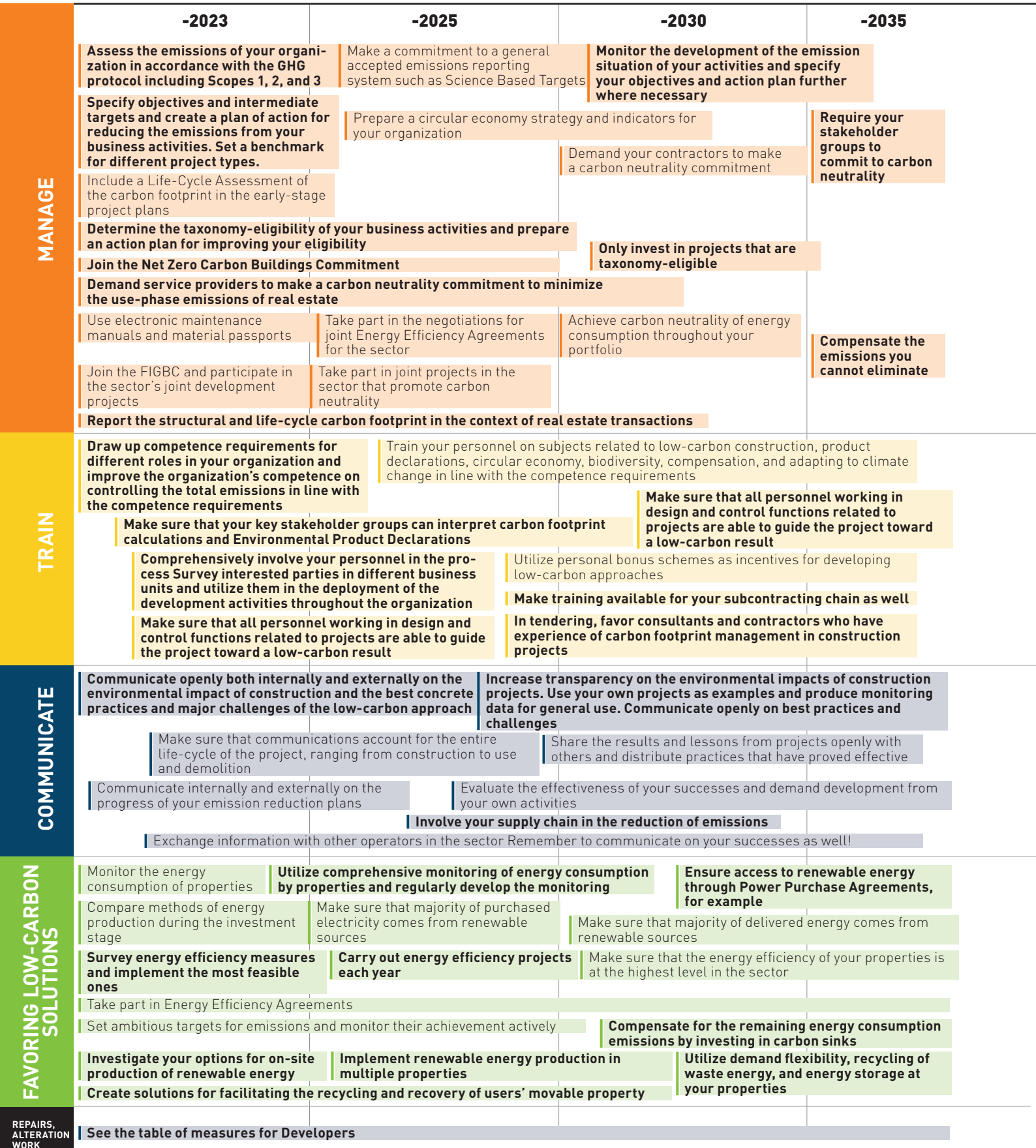
DESIGNERS AND OTHER SPECIALISTS

Consultants push the sector forward by offering expert services and developing new solutions to challenges that slow down progress.



REAL ESTATE INVESTORS

EU legislation and the taxonomy criteria in particular will have a substantial impact on the activities of real estate investors. Thus, investors have significant influence on the carbon neutralization of the energy consumption of property stock in particular.



MUNICIPALITIES, CITIES, AND OTHER PUBLIC ENTITIES

Public operators influence all construction projects and properties. Their steering effect is significant in zoning, construction supervision, and regulation, but municipalities are also a substantial property owner and developer. Public operators have been specified special measures, but they should also take the measures included in the tables of measures for developers and real estate investors into account in their projects.

National regulation

REGULATORY WORK

-2023 | -2025 | -2030 | -2035

- **Specify limit values for the life-cycle carbon footprint of projects**
- **Gradually tighten the limit values for life-cycle carbon footprint**
- **The limit values for carbon footprint amounts to 50 % of the original limit value**
- **The limit values for carbon footprint amounts to 70 % of the original limit value**
- **Specify national emission targets for transport infrastructure projects**
- Maintain and update an emission database (co2data.fi)
- Develop legislation to support the reuse of structures and materials
- Update and streamline recycling regulations and permit processes to allow for the use of recovered and recycled materials in short-term projects as well
- Expedite the approval process for new materials

Development of the activities of the municipality or city

MANAGE

-2023 | -2025 | -2030 | -2035

- **Demand service providers to make a carbon neutrality commitment to minimize the use-phase emissions of real estate**
- Make a commitment to a general accepted emissions reporting system such as Science Based Targets
- **Monitor the development of the emission situation of your activities and specify your objectives and action plan further where necessary**
- **Compensate the emissions you cannot eliminate**
- **Assess the emissions of your organization in accordance with the GHG protocol including Scopes 1, 2, 3**
- **Require your stakeholder groups to commit to carbon neutrality**
- Prepare a carbon neutrality objective, intermediate targets, action plan, and monitoring tools for the municipality Make sure that the low-carbon approach is included in the municipal or urban strategy
- **Prepare a circular economy objective, intermediate targets, and monitoring tools for the municipality**
- Plan the execution of infrastructure projects on long-term basis to allow for the identification of synergies between projects
- Investigate options for offering lower council tax rates to low-carbon buildings
- Prepare instructions for low-carbon planning
- Steer the mindset of policymakers to emphasize the low-carbon approach Make sure that municipal decisionmakers have sufficient information for their decision-making
- Guide the users of properties to make ecological choices
- **Support private property owners through consultation and training**
- Initiate plans for the coordination of the energy efficiency consultation service sector and allocate resources required for the coordination
- **Reinforce cooperation between cities to promote the low-carbon approach. Contribute to making the low-carbon approach a leading principle in regional programs as well**
- Create international contacts in order to identify best practices
- **Promote international cooperation and support other cities with their objectives**
- Engage housing companies in energy efficiency work through effective information steering
- Take part in joint projects in the sector that promote carbon neutrality
- Join the FIGBC and participate in the sector's joint development projects
- **Steer urban construction by specifying low-carbon objectives in land use agreements and the conditions for plot sales Help ambitious operators to pilot their solutions**

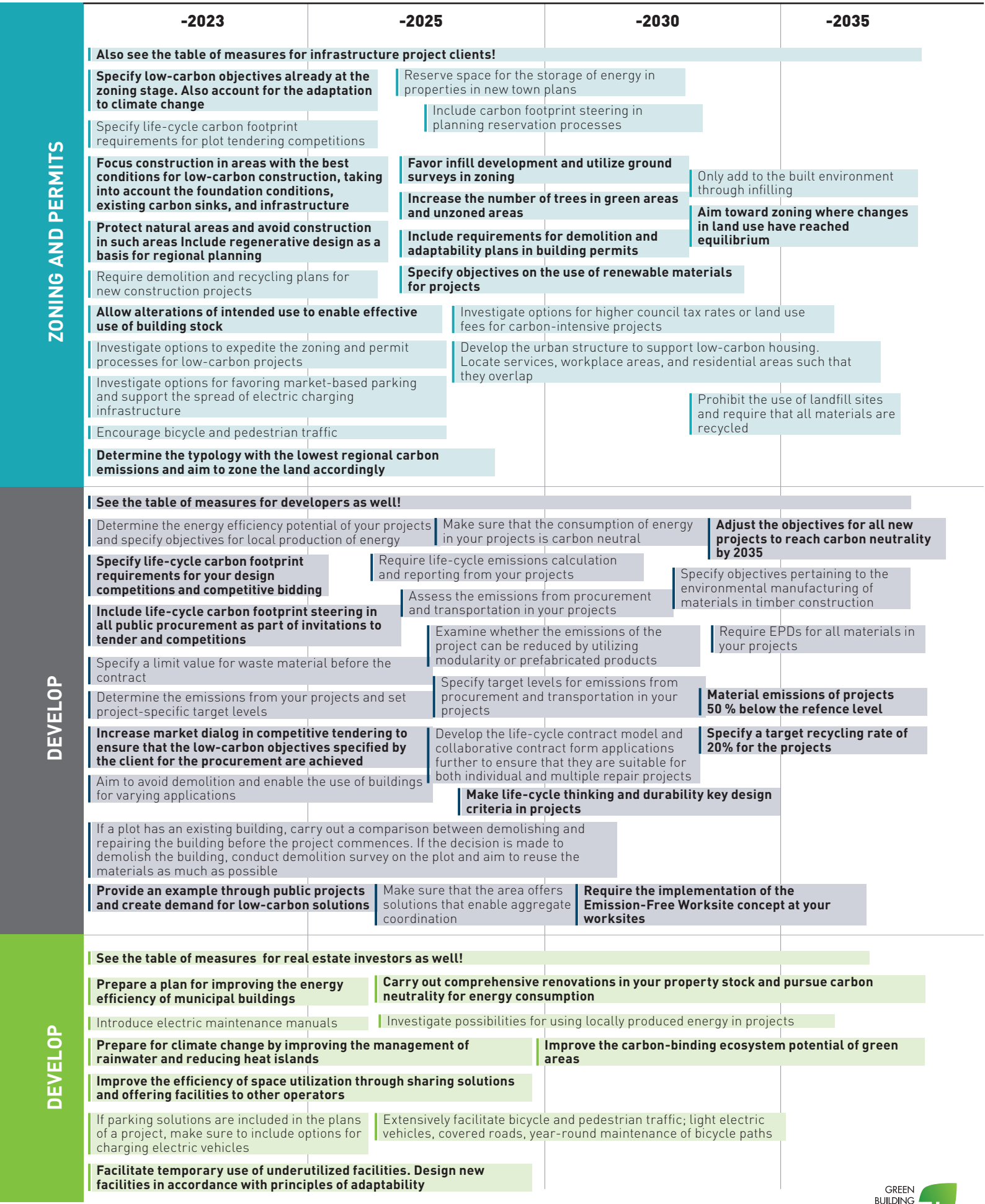
TRAIN

- **Draw up competence requirements for different roles and improve internal competence on controlling total emissions in line with the competence requirements**
- Train your personnel on subjects related to low-carbon construction, product declarations, circular economy, biodiversity, compensation, and adapting to climate change in line with the competence requirements
- **Make sure that your key stakeholder groups can interpret carbon footprint calculations and Environmental Product Declarations**
- **Comprehensively involve your personnel in the process Survey interested parties in different departments and utilize them in the deployment of the development activities**
- Utilize personal bonus schemes as incentives for developing low-carbon approaches
- **Make training available for your subcontracting chain as well**
- **Make sure that all personnel working in design and control functions related to projects are able to guide the project toward a low-carbon result**
- In tendering, require consultants and contractors to have experience of carbon footprint management in construction projects
- Offer thesis project opportunities pertaining to low-carbon approaches

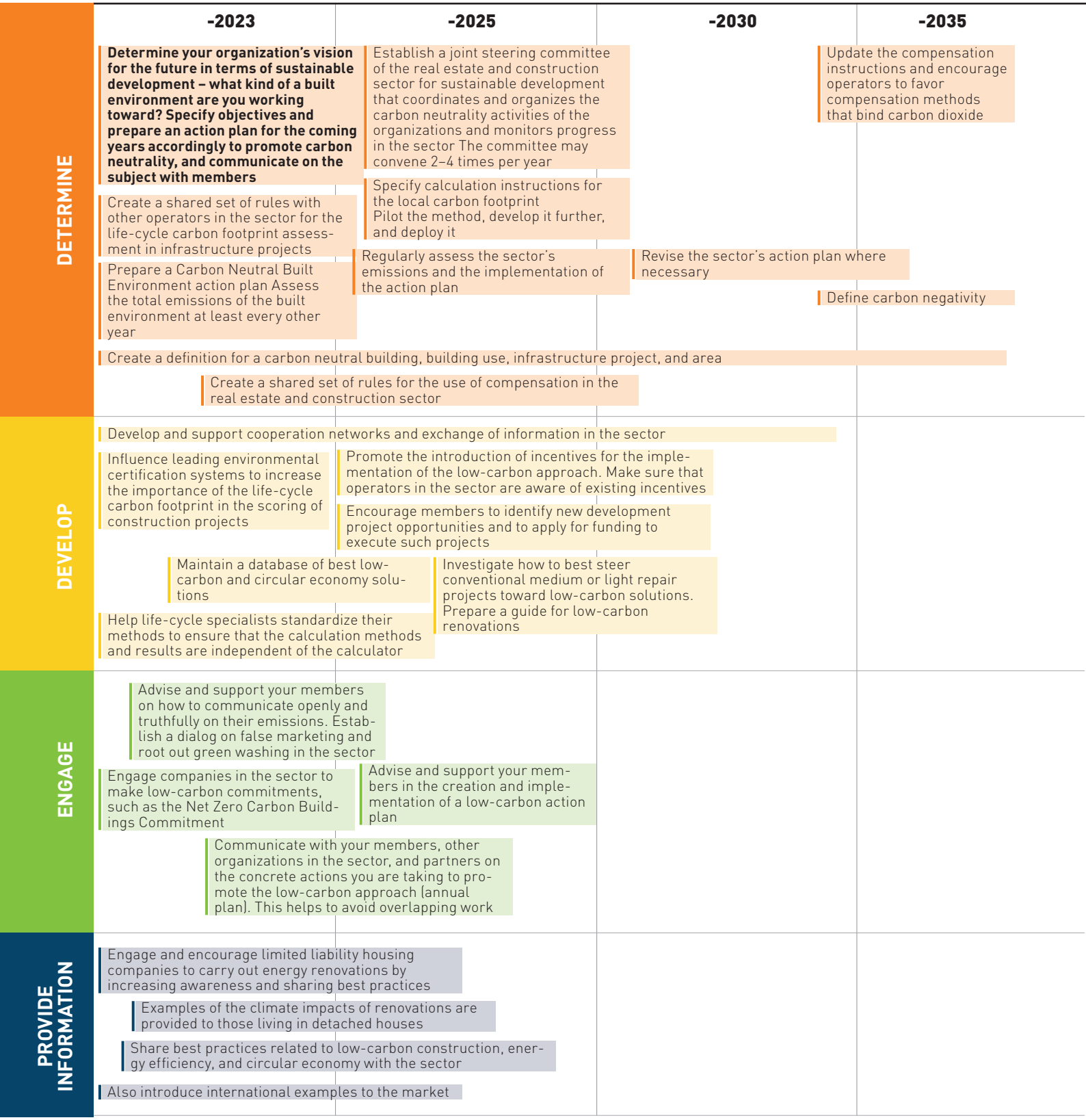
COMMUNICATE

- **Communicate openly both internally and externally on the environmental impact of construction and the best concrete practices and major challenges of the low-carbon approach**
- **Increase transparency on the environmental impacts of construction projects. Use your own projects as examples and produce monitoring data for general use. Communicate openly on best practices and challenges**
- Make sure that communications account for the entire life-cycle of the project, ranging from construction to use and demolition
- Share the results and lessons from projects openly with others and distribute practices that have proved effective
- Communicate internally and externally on the progress of your emission reduction plans
- Evaluate the effectiveness of your successes and demand development from your own activities
- **Make sure that residents also have the opportunity to review the climate impact of zoning and urban planning decisions**
- **Involve your supply chain in the reduction of emissions**
- Exchange information with other operators in the sector Remember to communicate on your successes as well!

Production measures



NON-GOVERNMENTAL ORGANIZATIONS



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