

Interreg
Baltic Sea Region



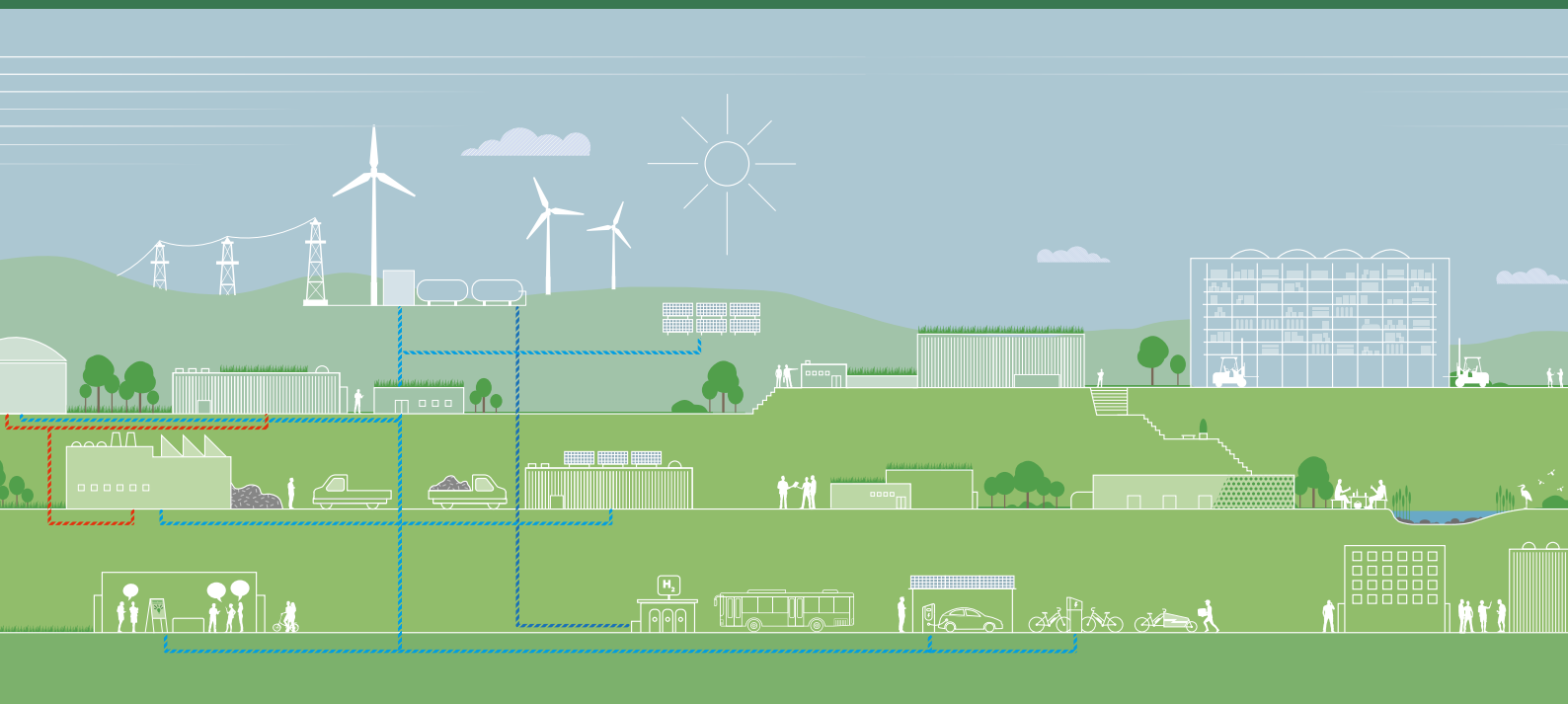
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ENERGY TRANSITION

GreenIndustrialAreas

Transnational standard for the certification of green industrial areas aiming at climate-neutrality



KESKI-SUOMEN LIITTO
REGIONAL COUNCIL OF CENTRAL FINLAND







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Introduction

Industrial and commercial areas produce high levels of greenhouse gases (GHG) and other emissions, and consume land, water and other resources. Around 30% of GHG emissions in Europe are caused by industrial production and manufacturing processes and business activities. Against the background of EU climate targets by 2030 - to reduce at least 55% of emissions and to fulfill 42.5% share of renewable energies in the EU's final energy consumption¹ -, industrial areas should be designed resource-efficient and climate-neutral in order to contribute to the achievement of these goals and to reduce dependence on fossil fuels. Therefore, companies and industrial areas around the world have introduced eco-label programs. However, across the Baltic Sea region there was no common understanding of the criteria that a 'green' industrial site should meet in order to be considered as such, and how to ensure that the use of the term is consistent. At the same time, energy transition represents a challenge and an opportunity for business innovation. Public bodies are called for promoting and supporting those companies that take a leadership role.

**Øyvind Martinsen, Intertek
Caleb Brett Denmark A/S,
QHSE Manager Denmark &
Norway**

„At Intertek Denmark A/S, we consider certification to be a competitive advantage, providing independent verification of sustainability efforts and building trust, reputation and employee engagement.“



The GreenIndustrialAreas project, funded by the European Union through the Interreg Baltic Sea Region Programme, brought together eleven partner institutions of different backgrounds from Germany, Denmark, Sweden, Finland, Latvia, Lithuania and Poland to exchange about energy transition

**Malin Norling,
City of Malmö**

„I am inspired, as always, after a visit to Kalundborg. There is always something new to explore at Kalundborg symbiosis. I have plenty to take back to Malmö and our work to further develop symbiosis locally. Reminder of drawing our symbiosis map (and keep it up-dated).“



approaches and the opportunities of promoting change through a certification of green industrial areas. The transnational collaboration resulted in a tool-box of technologies suitable to promote energy transition in industrial areas and the guideline in front of you.

The document emphasizes the advantages of certification for different stakeholders of an industrial area and lays out the steps to be taken to set up a certification structure on national or regional level. The state initiative „Grüne Gewerbegebiete in Mecklenburg – Vorpommern“, itself a result of an earlier Interreg project, is presented as a successful example that has been implemented since 2018. The document before you furthermore provides you with a common definition, a “Transnational standard”, of a green industrial area that shall be regarded as a benchmark. Finally, the process of certifying green industrial areas is described based on the learning of the project's pilot phase. Special focus is given on stakeholder activation since the active involvement of businesses, utility providers, public authorities and interest groups is both a cornerstone and a success factor for the certification process as well as continuous promotion of energy transition in industrial areas.

¹ https://commission.europa.eu/energy-climate-change-environment/overall-targets-and-reporting/2030-targets_de, 08.04.2025



Background: State initiative „Grüne Gewerbegebiete in Mecklenburg-Vorpommern“

The state initiative “Grüne Gewerbegebiete in Mecklenburg- Vorpommern” (Green Industrial Areas in Mecklenburg Western Pomerania) was launched in 2018. It is an initiative designed to use the advancement of renewable energies as a local asset for the sustainable development of commercial and industrial areas and to help attract more companies to the region. The central idea is the generation and use of renewable energies on a local level.

The initiative has its origins in the Interreg project ‘Baltic Energy Areas - A Planning Perspective’ (BEA-APP). The BEA-APP project ran from 2016 to 2019 with 11 partners from 8 countries in the Baltic Sea Region. After implementation as a regional pilot project, the state initiative was established at the state level.

In this context, regional value creation through the use of locally generated renewable energies plays a central role. As part of the state initiative ‘Green Industrial Areas in Mecklenburg- Western Pomerania’, existing industrial areas are designated as ‘Green Industrial Areas’ if they meet the following certification criteria:

Stefan Riemer, Managing director Agp – Agrarproduktgesellschaft mbH Lübesse

„The GreenIndustrialAreas project enables us to collaboratively explore innovative approaches to sustainable development [...]. Through close collaboration, valuable synergies have emerged – particularly in identifying and implementing energy-efficient optimization measures. This represents an important step toward a unified, forward-looking certification of green industrial areas.“

**City of Aankoski,
Sari Åkerlund,
Vitality Director/Business
development Director**



„I visited with colleagues from Central Finland in the Kokkola Industrial Park in the autumn of 2023. There we were able to see how collaboration has been built in a diverse, association-driven manner, taking all stakeholders into account. I have been hosting GreenIndustrialAreas partner meeting group in Aankoski in April 2024, and participated in a peer visit to Kalundborg in October 2024, which was a very nice trip to see the Kalundborg Symbiosis itself and to meet the responsible team behind. We have a similar bio-economy ecosystem in Aankoski, where we have similar business opportunities but also challenges. I got many ideas which are easy to transfer. Participating in the project’s pilot phase to certify green industrial areas allowed me to get many ideas that are easily transferable and to learn from similar areas abroad.“

1. Local renewable energy supply ($\geq 50\%$ renewable electricity or renewable heat, alternative $\geq 75\%$ green electricity mix from the grid)
2. Proof of measures to improve energy management and increase energy efficiency
3. Proof of initiatives in the area of sustainable land management

The criteria are verified by an independent engineering consulting firm. Optionally, an energy strategy will be developed for the areas to provide technical support for the sustainable further development. In addition to a high-profile event at the site, a marketing package is provided to the site operators and the resident companies to promote the site’s status as a Green Industrial Area.

The label ‘Grüne Gewerbegebiete – natürlich erfolgreich’ (Green Industrial Areas – Naturally Successful) is a protected trademark and is subject to the relevant criteria. Currently, three industrial areas in the cities of Hagenow, Parchim and Grevesmühlen

in Mecklenburg-Western Pomerania have been certified. These industrial areas reported an increased public awareness and improved stakeholder engagement thanks to participation. The certification as a Green Industrial Area was also favourably acknowledged in negotiations with potential investors.

This regional initiative was used as a good practice for the transnational collaboration in the GreenIndustrialAreas project and the joint elaboration of this guideline.

Grzegorz Pruszyński,
Chief Engineer for Energy
and Automation at Malow



„Companies need a supportive environment for green transformation, and certification is a driver highlighting companies like Malow S.A. as leaders.“

Johannes Hakala,
Environmental specialist,
Meltex Oy Plastics



„The GreenIndustrialAreas project has been a useful experience for us. We've gained new insights from the certification guidelines on biodiversity and sustainable commuting, improving our understanding of environmental best practices. The concrete examples of symbiosis and collaboration across sectors have been inspiring, and we'll follow the development of the local pilot site with interest, hoping to find synergies along the way.“

A transnational standard for green industrial areas

Learning process of the project

This document proposes certification of green industrial areas as a means of rewarding and highlighting those industrial areas and their stakeholders that are pioneers in energy transition and consequently environmental responsibility. Moreover, the transnational partners of the GreenIndustrialAreas project collaborated to establish a common understanding of the characteristics of a **green** industrial area.

A draft of a certification guideline was elaborated already during the first year of the Interreg project. This draft guideline was then tested in different institutional settings during the project's pilot phase to better understand the local challenges. The pilot

phase comprised industrial sites in Neustrelitz and Lübesse (Germany), Kalundborg (Denmark), Jyväskylä (Finland), Jelgava (Latvia) as well as scattered sites of industrial production within the Suwałki Special Economic Zone (Poland). These sites differ significantly in maturity, size, ownership and their composition of located companies. The knowledge gained during the pilot phase has been carefully analysed before being incorporated into a transnational standard.

Characteristics of a green industrial area

An industrial area is by definition a location that is zoned and used for industrial activities. The area may additionally include green spaces or brownfield



sites that have yet to be revitalized, or office buildings, but the presence of industrial production is essential. While the certification of industrial areas is only recommended to areas that have achieved a certain level of maturity, new and future industrial areas can use the criteria of certification as guidance for their further development. The key feature of a green industrial area is its pioneering role in energy transition, climate action and environmental responsibility. Most importantly, this is underpinned by renewable energy sources as means to achieve a reduction of greenhouse gas emissions. To be considered a green industrial area, at least 50 per cent of the energy used in an industrial area needs to be supplied by renewable energies. Moreover, the companies of the industrial area and stakeholders demonstrate that they take

further action to mitigate the climate impact of their industrial activities. In an ideal green industrial area all available approaches are pursued to reduce greenhouse gas emissions and avoid negative environmental impacts. These include, as a non-exhaustive list, the supply of renewable energies within the industrial area, reduction of greenhouse gas emissions, outstanding energy efficiency, approaches of industrial symbiosis approaches to reduce waste and the need for energy-intensive resources such as water or raw materials, the active promotion of biodiversity, a minimisation of land use and concepts for low-carbon mobility and sustainable logistics. In addition, progress must also be documented and disclosed and the data and results must be accessible. The certification of green industrial areas aims to honour and highlight such efforts.

Implementation of a certification system

Criteria of a green industrial area

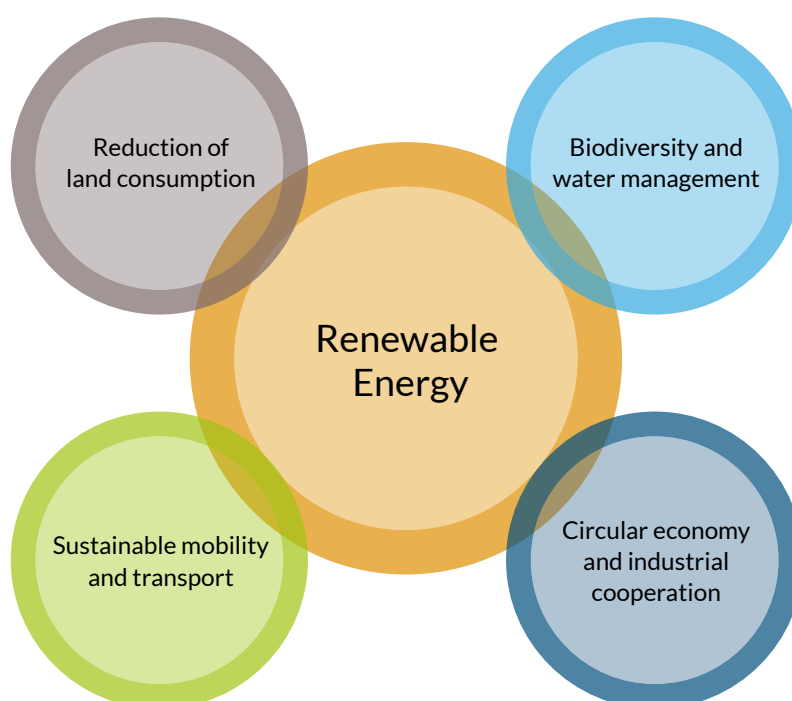
As outlined above, to be certified as a Green Industrial Area, a site must demonstrate a predominant share (at least 50 percent) of energy from renewable sources in relation to its total energy consumption. The reduction of CO₂ emissions is a central component of the use of renewable energies, as these energies do not directly release greenhouse gases. This includes the energy used for electricity, heating/cooling and fuel for industrial processes. The certifying authority responsible for the certification process needs to define the means to verify if this minimum requirement is fulfilled.

During the pilot phase of the GreenIndustrialAreas project, different approaches to determine the overall energy balance of an industrial area were used. Data from individual companies and utility suppliers as well as energy-intensive resources may be considered. The resulting data that allows to determine whether the renewable energies threshold is met must be transparent and reproducible.

If the eligibility criteria is fulfilled, further information and data on energy use and other environmental impacts of industrial activities are collected with the objective of identifying good practices that underscore the leading role of the industrial area and its stakeholders. Though only one base indicator is suggested here, the certifying authority, if existing in collaboration with its advisory board, may decide that additional criteria must be fulfilled in order to obtain a certification as a green industrial area.

As a result of the GreenIndustrialAreas project, four additional categories have been identified.

- **Reduction of land consumption:** This criterion comprises activities that prioritise use of already sealed soils while protecting unsealed surfaces. This includes among others land recycling, revitalisation of brownfields as well as vertical expansion. Moreover, the infrastructure both within the industrial area and infrastructures for transport, resource supply and disposal should aim for a minimisation of resource use.
- **Low-carbon mobility and sustainable logistics:** The criterion addresses how people and goods arrive to the industrial area and their carbon footprint. Possible actions of an industrial area





include the access and use of collective transport, car pooling, cycling, charging stations for electric vehicles and the promotion of intermodal transport.

- **Biodiversity and water management:** The criterion considers the reduction of the environmental footprint of industrial activities by efforts such as rainwater use, water recycling, environmentally friendly lighting and the protection of open green spaces within the industrial area.
- **Circular economy and industrial cooperation:** The criterion is composed by an industrial area's activities addressing collaboration to use of secondary raw materials and the active seeking of synergies to reduce the resources necessary for industrial production. The criterion may furthermore honour networking and joint structures as means to increase an industrial area's resilience and readiness to further advance energy transition.

A list of suggested indicators for these four additional categories can be found in Annex II.

Set-up of certification structures

A system for the certification of green industrial areas should be established at either national or regional level depending on the size of the territory. Ideally, a public authority or subordinated public service providers assumes the responsibility as a certifying authority, hence combining public trust and accountability with the responsibility for the territory's development. Though one organisation needs to act as certifying authority, it is recommended that the initiative is based on a network of institutions that jointly seek to exploit the potentials of green industrial areas' certification. This group might include local public authorities, especially their offices for economic development, energy agencies, public utilities, economic interest groups as well as pressure groups promoting climate action.

As a first action, this group should profoundly exchange about the anticipated benefits and value added, as those vary between one territory and the other. It is furthermore advisable to verify these outcomes with a select group of stakeholders of

industrial areas. These discussions provide the necessary input to agree in the next step about the main objectives of certification specifically for the addressed territory as well as decisions regarding the set of criteria to be applied. While this document (see below) specifies a minimum threshold of renewable energies of at least half the industrial area's total energy use, additional criteria, for example, emphasizing sustainable transport of people and goods to and from an industrial area or a more ambitious renewable energy threshold might be chosen.

For the institution chosen to act as certifying authority, it needs to be decided whether an existing or a new organisational unit performs the tasks. Adequate personnel resources to maintain at least a point for first contact for information (phone, email address, web page) are required, as well as budgets to finance events, public relations and, where necessary, external expertise. Other institutions that actively contributed to the initial discussions about the certification system could be invited to form an advisory board which monitors the initiative and proposes future adaptations (e.g. additional or enhanced criteria).

To promote participation in the initiative, a combination of top-down and bottom-up approaches most likely leads to the best results. This means that public authorities responsible for the promotion of energy transition and economic innovation should on one hand encourage stakeholders of industrial areas to seek certification, while at the same time structures are in place that allow both public and private managers of industrial areas to apply for participation in their own interest. Being often closely associated with industrial areas within their own territory and responsible for economic development promotion, local public authorities play a crucial role in triggering broad awareness for the certification of green industrial areas.

Finally, the certifying authority, possibly in cooperation with an advisory board, elaborates the rules of procedure. This includes not only the criteria to be met but also how compliance is verified during the certification process. Furthermore, the validity period of a certificate is defined, or, alternatively, if certified industrial areas are required to report about the established indicators after a certain period of

time. This step also includes the certificate and the use of it by different stakeholders. For example, successfully certified green industrial areas, possibly also individual companies within, could be allowed to use a label and/or logo for their promotional activities.

No matter which approach prevails, it is advised that a publicity campaign is launched by the certifying body or other involved stakeholders to highlight the initiative. This includes the availability of information and materials for all stakeholders of an industrial area that seek certification.

Once the certification system has been established, the certifying authority should consider additional actions to further promote the added value of certification. This could include better access to public funding, networking between stakeholders of certified industrial areas, support for promotional activities including location marketing, and advice to further mitigate environmental impacts and the climate footprint of economic activities.

A checklist for the set-up certification structures can be found in Annex I.

Benefits of a certification

Obtaining certification for an industrial area offers numerous advantages, both for individual businesses and the area as a whole. First and foremost, certifications help build credibility and trust. In times when “green” or “eco” are inflationarily used, a certification by an acknowledged authority demonstrates real commitment to reduce the carbon footprint of industrial processes.

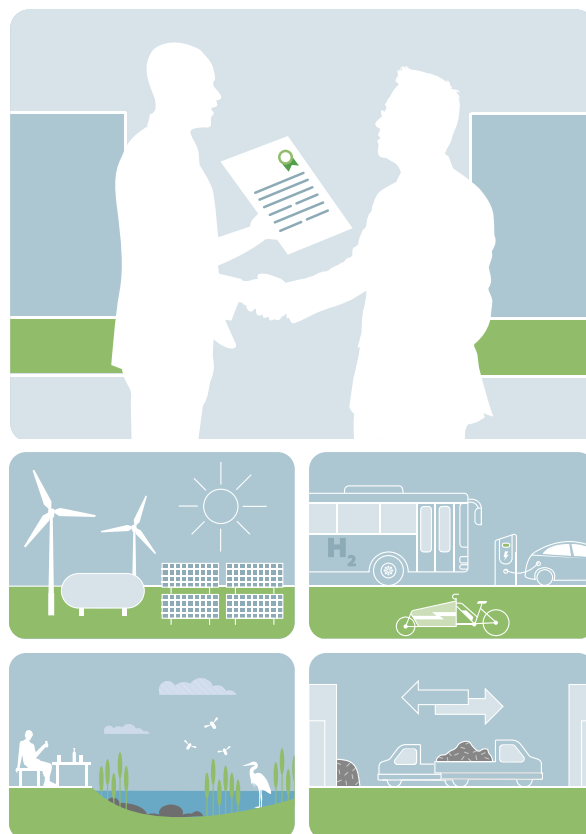
Certification furthermore emphasizes the compliance with regulations or standards, and highlights outstanding performances. Pioneers in energy transition and ecological well-doing receive a benefit and public attention highlighting their efforts and achievements.

Successfully obtaining a certificate furthermore improves access to partnerships, funding and provides a competitive advantage. Businesses located within a certified industrial area find it easier to attract

skilled labour, while the industrial area’s development benefits from the certificate as a marketing tool and enhanced attractiveness for new business allocation.

Finally, the certification process unleashes synergy effects through networking within and beyond the industrial area. While the process of certification represents a common voyage of all the area’s stakeholders, individual businesses additionally benefit from the investigation of potentials for industrial symbiosis such as resource sharing and reuse.

More specifically, the certification of green industrial areas effectively promotes energy transition and compliance with environmental, social and governance goals. For promoters of economic development and business innovation, the use of a certificate provides a meaningful tool to both reward the leaders in these domains and to encourage others to take action by providing a goal post as visible appreciation for these efforts. Finally, the certification of green industrial areas offers a promotional tool addressing energy supply and use at the same time as key means to reduce the greenhouse gas emission of industrial areas together with economic development.





Process of certification

Identification of suitable industrial areas

How an industrial area enters a certification process may differ from one certification regime to another. Depending on the rules of procedure published by the certifying body, individual industrial areas might send a motivated letter or application for certification to the certifying body.

Likewise, public authorities aiming to promote energy transition and business innovation could take a leading role in identifying and nominating industrial areas for certification. In both cases the next step should include a basic analysis (overview) to determine whether the concerned area has potential for certification as a green industrial area. If confirmed, the area formally enters the process. In other cases, the certifying body might refer to the GreenIndustrialAreas project's second output which is a tool-box of good practices highlighting the technologies and means that industrial areas and individual businesses can take in preparation of a future certification.

The public information campaigns described in the 'Implementation' chapter are effective here.

The certification process starts by clarifying the roles of the different involved actors. While the certifying body's rules of procedure define its competences and how the established criteria are verified, the industrial areas itself represent different stakeholders without hierarchy and often without well established structures. In these cases it is recommended that the local public authority or a public-equivalent body (utility company, economic development agency, energy agency, e.g.) actively accompanies the certification process. Most importantly, it needs to be decided who collects data, who invites to events and who is responsible for aligning all stakeholders to the certification process.

Stakeholder dialogue

Successful certification requires the cooperation and acceptance of local companies and other stakeholders in the industrial area. The certification process relies on the support of stakeholders and their willingness to meet the criteria and requirements of a green industrial area. It is therefore advisable to carry out a stakeholder analysis and to approach them at a very early stage of the certification process. Through their commitment and interest in the development, stakeholders act as advocates and multipliers, encouraging other actors to participate.

Possible local stakeholders

- real estate owners,
- other public authorities,
- utility providers,
- business support organisations,
- energy agencies,
- transport companies,
- logistics service providers
- environmental protection and climate action groups.

Arranging a local kick-off event should be considered to bring together all relevant stakeholders of the industrial area. Besides presenting all details of the certification process, including the benefits of successful certification for different target groups, the event could be used to provide a better overview about the functional and energy-related situation of the area.

Alternatively, or additionally, a consultation process with all stakeholders should follow. This activity aims at clarifying all framework conditions, limitations and restrictions (especially in terms of data availability) and helps to avoid misunderstandings about resources or the duration of the process. The process could take place in the form of face-to-face meetings, the use of digital platforms, by targeted local events or questionnaires.

Monitoring compliance with criteria

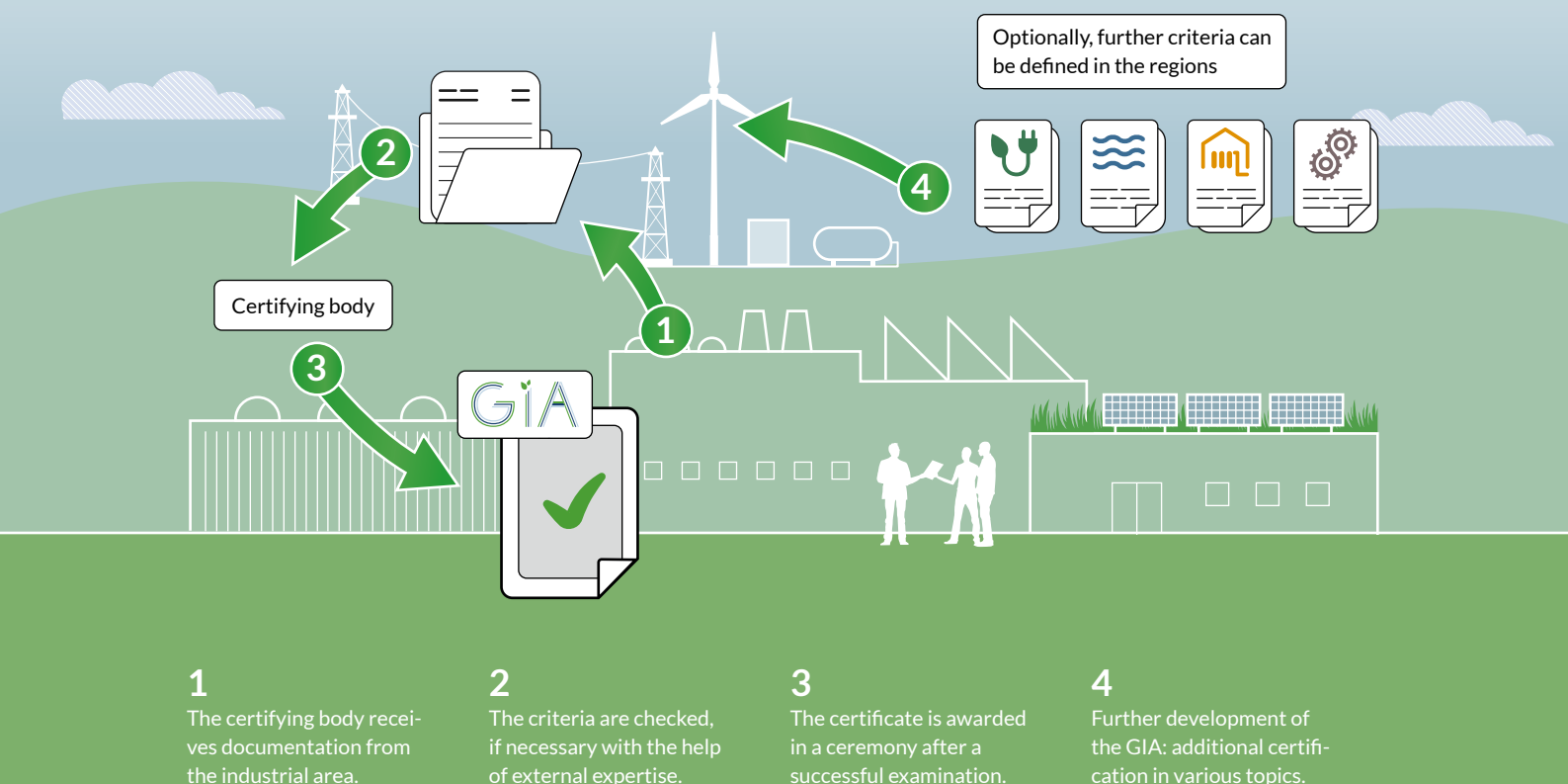
In this crucial phase, a thorough review of the criteria is carried out. Depending on the rules of procedure established by the certifying body, this step may involve external assessors, data from utility providers, and on-site verification. Even if the certification criteria are limited to meeting the renewable energy threshold, it is recommended that a quantitative and qualitative assessment be conducted of the efforts of the industrial area and its stakeholders to reduce greenhouse gas emissions and its environmental footprint.

In addition, it should be considered imperative that the data report suggesting that an industrial area passes the certification as a green industrial area is both transparent and reproducible. If commercial secrets or copyrights hinder a publication, cooperation with independent institutions should be sought in order to increase confidence in the certificate.

Certificate award

The certification process concludes with the awarding of the certificate to the stakeholders of the industrial area. A public event and media invitation should be considered as the highlight of the entire process. The certificate itself is more than a recognition of the quality achieved: It represents official proof of the industrial area's pioneering position in terms of energy efficiency and environmental standards.

Obtaining the certificate opens up a number of possibilities for its use, particularly in the area of marketing. The certificate can be used for targeted marketing campaigns to emphasise the sustainability and quality efforts of the green industrial area. This can increase the attractiveness for partners, investors and other stakeholders. The use of the certificate not only creates added value for the companies and the certified green industrial area itself, but also helps to promote standards in the area of energy efficiency and environmental standards.





Certification follow-up

To ensure the continuous quality of the green industrial area, periodic monitoring of compliance with performance requirements should be carried out. The intervals and means are defined by the certifying body in the rules of procedure.

As technology continues to advance, and with it the ability to further increase the use of renewable energy and energy efficiency, subsequent workshops should be considered to drive further investments towards climate neutrality. Regular local events will also strengthen collaboration within the industrial area and pave the way for exploiting synergies between its stakeholders.

Outlook

Green industrial areas and renewable energies are key components of sustainable economic development. In the future, these concepts will increasingly be combined to create environmentally friendly, resource-conserving and energy-efficient production sites. In an increasingly climate-conscious society, the success of such initiatives will also be determined by the adaptation of the legal framework and cooperation between companies, local authorities and research institutions. This transformation enables companies to position themselves as responsible players while benefiting from government

subsidies and a growing market for sustainable products and services.

In the long term, green industrial areas will become a key component of the economic and environmental transformation. They will not only promote a sustainable economy, but also serve as a model for other regions and industries on how to reconcile economic growth with environmental protection and social responsibility. The path to a green economy is therefore a promising model for the future, both ecologically and economically.

Annexes:

- I) Checklist for the set-up of certification structures
- II) Optional additional criteria for the certification of green industrial areas





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Checklist for the set-up of certification structures

1. Structure setup and responsibilities

- ☐ Define the territorial level for the certification system (national or regional).
- ☐ Define whether an existing or new organizational unit will act as certifying authority (ideally a public authority or subordinate public service provider) and designate the certifying authority.
- ☐ Establish a network of institutions (e.g., local public authorities, energy agencies, utilities, business associations, climate action groups, funding advisory services).
- ☐ Clarify responsibilities within the network.

2. Initial consultations and goal definition

- ☐ Conduct exchanges within the network about anticipated benefits and added value of certification.
- ☐ Involve a selected group of industrial area stakeholders in round table discussion to verify expectations.
- ☐ Define the main objectives and purpose of certification for the specific territory.
- ☐ Decide on the applicable criteria (e.g., minimum share of renewable energy, sustainable transport).
- ☐ Consider additional support measures for certified industrial areas (e.g., initiation of new support instruments, implementation of existing support programs, or better access to public funding).

3. Rules and certification process

- ☐ Develop procedural rules in cooperation with the advisory board (criteria, compliance verification).
- ☐ Develop application forms, FAQs, etc.
- ☐ Set up a monitoring system (at what intervals will compliance with the criteria be checked, how and by whom).
- ☐ Define certificate validity periods or reporting requirements after certification.
- ☐ Design and approve certificates, labels, and logos for certified industrial areas and possibly individual companies.

4. Organization and resources

- ☐ Ensure sufficient financial and human resources (e.g. direct contact person with functional mailbox and hotline).
- ☐ Plan budget for events, public relations, and external expertise if needed.
- ☐ Make sure, you have external expertise for the certification (e.g. invite additional institutions to form an advisory board to monitor and develop the initiative or decide on structures, applications, and adaptation of criteria).

5. Participation structures and motivation

- ☐ Develop a combination of top-down and bottom-up approaches to encourage participation (e.g. top-down for defining the criteria to be met, bottom-up for the type of evidence of fulfillment of the criteria).
- ☐ Engage local authorities to raise awareness and promote certification.
- ☐ Establish clear application and participation procedures for industrial areas.
- ☐ Compile the funding opportunities available for developing a green industrial area.
- ☐ Motivate the network and cooperation partners to exchange information (e.g., cooperation and exchange platforms, consulting, coaching, shared use of infrastructure, further training, support from associations, innovation centers, etc.).

6. Communication and public relations

- ☐ Plan and launch a publicity campaign to raise awareness of the certification system (advertisements, press releases).
- ☐ Provide information materials for all interested stakeholders (e.g. brochures, information events).
- ☐ Maintain communication channels (website, newsletters, etc.).
- ☐ Plan a kick-off event.

7. Follow-up actions and promotion

- ☐ Promote networking and exchange among certified sites.
- ☐ Support marketing and location promotion activities.
- ☐ Provide advice to further reduce environmental and climate impacts.

Optional additional criteria for the certification of green industrial areas

1. Improvement of Energy Management

Objective: Reduce energy consumption and costs through systematic energy management.

a) Implementation of an Energy Management System

- Certification indicator: Adoption of ISO 50001 or equivalent energy management standards
- Establishment of clear energy performance indicators and targets
- Employee energy awareness and training programs

b) Annual Energy Monitoring

- Installation of smart meters and submetering for detailed energy tracking
- Regular publication of energy consumption reports with benchmarking
- Use of energy management software for continuous monitoring

c) External Energy Consulting

- Engagement of third-party energy auditors to identify efficiency opportunities
- Incorporation of external expert recommendations into improvement plans
- Verification of implemented energy-saving measures by external consultants

d) Internal Energy Efficiency Event

- Organizing company-wide energy efficiency campaigns or competitions
 - Employee-led initiatives for energy-saving projects
 - Sharing of best practices and success stories internally
-

2. Sustainable Land Use and Infrastructure Planning

Objective: Protect natural outdoor areas by prioritizing reuse of brownfield sites.

a) Priority Use of Conversion Areas / Brownfield Sites

- Documentation of site history and prior land use to assess contamination
- Use of environmental impact assessments for redevelopment planning
- Incentives or policies favoring brownfield redevelopment over greenfield expansion

b) Efficient Technical Infrastructure

- Integration of smart traffic management systems to reduce congestion
- Implementation of low-impact drainage and sewerage solutions (e.g., permeable pavements)
- Deployment of energy-efficient and resilient communication networks

c) Soil Management and Recycling

- Soil remediation techniques and monitoring of soil health
 - Use of recycled or reclaimed soil materials in landscaping and construction
 - Preventive measures to avoid soil erosion and contamination during construction
-

3. Sustainable Mobility and Low-Emission Transport

Objective: Promote low carbon mobility and transport within and to/from the industrial area.

a) Provision of Charging Stations for Bicycles and Electric Cars

- Installation of solar-powered or green-energy charging stations
- Incentives for employees using electric or non-motorized transport
- Monitoring usage rates to optimize capacity

**b) Encouragement of Carpooling, Carsharing, and Company Buses**

- Development of a company carpool matching platform
- Subsidies or priority parking for carpool vehicles
- Implementation of scheduled shuttle services connecting to public transport hubs

c) Use of Railway Sidings or Alternative Truck Fuels

Establishment of multimodal logistics hubs to facilitate rail freight use
Support for transitioning trucks to biofuels, hydrogen, or electric power
Partnerships with transport providers for greener freight solutions

4. Water Management, Lighting, and Greening in the Industrial Area

Objective: Implement intelligent and efficient management systems to ensure sustainable use of natural resources.

a) Rainwater Management and Retention Areas

- Installation of rain gardens, retention ponds, and permeable surfaces
- Use of rainwater harvesting systems for non-potable applications
- Real-time monitoring of water retention effectiveness

b) Groundwater and Drinking Water Management

- Implementation of water-saving devices and leak detection systems
- Regular water quality testing and protection measures around groundwater recharge zones
- Employee training on water conservation practices

c) Insect-Friendly and Low Energy Lighting Concepts

- Use of LED lighting with minimized blue light emissions to protect insects
- Deployment of motion sensors and dimmers to reduce energy use
- Incorporation of lighting curfews or zoning to limit light pollution

d) Greening Concepts in Outdoor Areas

- Planting native species to support local biodiversity
- Creation of green roofs and walls on buildings
- Design of outdoor spaces to enhance microclimates and provide recreational areas

5. Waste Reduction, Circular Economy, and Material Management

Objective: Promote material reuse, symbiosis, recycling, and waste reduction.

a) Promotion of Circular Economy

- Development of industrial symbiosis networks where waste streams become raw materials for others
- Tracking and reporting secondary raw material use rates
- Investment in technologies to recover energy and materials from waste

b) Recycling and Waste Management Concepts

- Implementation of comprehensive waste sorting and collection systems
- Employee engagement campaigns to increase recycling rates
- Collaboration with certified waste recyclers and waste-to-energy facilities