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ECONOMIC AND SOCIAL COMMISSION FOR WESTERN ASIA**



GREEN HELP DESK MANAGEMENT GUIDE

DRAFT

REPORT WRITTEN BY

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ABBREVIATIONS

CPM	Critical Path Method
GE	Green Economy
FAQ	Frequently Asked Questions
GG	Green Growth
GHD	Green Help Desk
KB	Knowledge Base
KM	Knowledge Management
PERT	Program Review and Evaluation Technique
R&D	Research and Development
SD	Sustainable Development
SME	Small and Medium Enterprises
SP	Service Provider

GLOSSARY

“Brown”Growth describes economic development that relies heavily on resource extraction and fossil fuels without consideration negative side effects on the environment.

“Burden shifting” contradicts the **Life Cycle Perspective**, as it leads to “minimizing impacts at one stage of the life cycle, or in one geographic region, or in a particular impact category, while avoiding unrecognized increased impacts elsewhere¹”.

Eco-Innovation: the application of direct or indirect ecological improvements to the development of products and processes that contribute to sustainable development. Those may be technical either technical (environmentally friendly technological advances) or social (socially acceptable innovative paths towards sustainability).

Green Economy: An economic system “that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities”, and is therefore “low carbon, resource efficient and socially inclusive²”. One feature of the Green Economy is that it takes directly into account the environment, through such tools as the valuation of natural capital, ecological services ...etc.

Green Finance is investment that focuses on sustainable development technologies such as renewable-energy. The funding is provided through loans that are called **“Green Loans”**. In general, those loans acknowledge higher up-front costs (for example, increasing the amount borrowed by up to 10-20% in case of housing), but they take into account reduced running costs of Green Technologies (for example, electricity and heating in the case of housing), and thus would write-in payments on an increasing scale.

Goodwill is originally an accounting concept that describes an “intangible asset” (not a physical asset like real estate or equipment). An obvious example is brand name, but it could also be good customer relations, good employee relations, patents, proprietary technology ..etc.

A **Knowledge Base** extends a database. While a database is a simple store of information or data, a Knowledge Base is also the set of underlying facts, assumptions, and rules that is needed to solve a problem.

The holistic **Life Cycle Perspective** helps “identify possible improvements across the industrial system and through all the product’s life cycle stages¹”.

Sustainable Patterns of Production and Consumption is “about promoting resource and energy efficiency and sustainable infrastructure while offering opportunities such as creating new markets and generating green and decent jobs”. It “is especially beneficial for developing countries as it provides an opportunity for them to “leapfrog” to more resource-efficient, environmentally sound and competitive technologies, allowing them to bypass inefficient and polluting phases of development”³.

A **Value chain** is the chain of all the activities undertaken by a firm operating in a specific industry. Those activities are carried out in order to deliver a product or service to market.

The **Waste Hierarchy** ranks waste management options based on their impact on the environment; (1) Prevention or reduction, where the generation of waste is minimized in the first place; (2) Reuse, where products or materials are used again for the same or a similar purpose; (3) Recycling, after used, reused, or unused have been collected, sorted, and reprocessed for reuse; (4) Recovery, where either component materials are recovered or energy generated through incineration.; and (5) disposal, the least favoured option where waste is stored into landfills.

¹ EPA, 2010.

² UNEP, 2003.

³ UNEP-RONA, 2012.

White Paper: Report providing information about an issue, generally issued by a recognized authority such a governmental body or a trade association.

EXECUTIVE SUMMARY

The objective of the Green Help-Desk Management Guide is to inform the Green Help Desk (GHD) managers on how to structure the helpdesk to deploy resources so as to identify needs, collect necessary and relevant data, standardize information, run a motivated and productive team, and prioritize the services to be provided and manage their delivery.

To help with the GHD operation, the guide does two things; (1) it shows “how to” carry out any given task, and (2) it provides further background. This is done for two reasons:

1. There are two phases to the life of the GHD; a first phase in which the GHD is responding to needs and establishing itself; and a second phases where the GHD grows to become a library and a catalogue.
2. As the GHD grows, its operation would require more work and maintenance, and therefore will cost more. However, because it will also interact with more issues, there will be a decrease in relative operational costs, i.e. the operational cost per case. Yet this will only happen if the GHD is created properly from “the get-go”.

This document provides guidance on how to establish a well build Green Help Desk and its knowledge base from the start. The document divides the life of the GHD into **two phases**:

1. A “**foundation**” phase, in which the GHD starts responding to needs. At first, the work will focuses on answering five key questions; “*What do we want to do?*”; “*What do we want to do?*”; “*Who’s doing what?*”; “*What do we need?*”; “*What do We Know?*”.
 - a. The focus here is on the applicability and relevance of the information. The speed of delivery of the information, while important, remains secondary.
 - b. From the start, the aim of GHD staff is three-fold. They aim to; (1) initially, they work help and educate customers through a database of document cases; (2) then, as the complexity of the case becomes apparent, they serve as a conduit between customers and relevant experts; (3) throughout the process, they document the issues raised and resolved in order to grow the “knowledge base” of the GHD.
2. An “**expansion**” phase, where the GHD becomes essentially an interactive Knowledge Base (KB) as it grows. As such, it needs to organize the information in a way that it is easily searchable and can be provided in a contextual manner. This information would be provided online, and the GHD would help promote capacity building by attract website traffic through either its offer of valuable information, or links to valuable resources, in such a way as to provide people with a “go to” place where they could find information on the Green Economy that is hard to find elsewhere. Over time, the GHD will grow to act both as a library and a catalogue accessible online, with the following key differences:
 - a. While the accessibility of an online resource is important, it does not need to give extensive access to its customers.
 - b. Self-service options would be restricted to frequently asked questions, specific instructions, as well as document case histories.

I. THE GREEN ECONOMY TRANSITION

The key component of the transition to the Green Economy (GE) is the transition of businesses towards “Sustainable Patterns of Production and Consumption”. Businesses that successfully complete this transition will be more resource and energy efficiency, while providing more revenue and generating more rewarding jobs. In the new economic environment, businesses are both “pushed” and a “pulled” towards the transition to “Sustainable Patterns of Production and Consumption”;

- Businesses are pushed by a **need** for to adapt to a new economic environment where resources are scarce and competition fierce;
- Businesses are pulled by new **opportunities** for further growth and development for those that can leverage the new knowledge and adapt to the new conditions.

In this context, the Green Help Desk offers a **solution** to assist them in this transition.

A Why a “Green Help Desk”?

The transition towards “Sustainable Patterns of Production and Consumption” does open up unprecedented opportunities for those businesses who can adapt appropriately. Such “**Green Businesses**” will benefit from:

- **Access to new and emerging markets**, because of the new demand for “greener” products. In addition, more stringent regulation may close off access to “brown” products and services.
- **Reduced production costs across the value chain** that results from both decrease waste of resources and improved employee productivity.
- Keeping ahead of new and **upcoming standards and regulations**, especially “if the company takes a leadership role and is able to influence policy makers to introduce legislation that is aligned with their own best-practice⁴”.
- **Attract financial resources** that are pulled towards eco-innovative schemes, or that are part of the new “Green Finance”. This is especially the case of public funding and grants that are often “easier to obtain if the company is able to demonstrate significant sustainability benefits as part of a funding proposal⁴”.
- **Increase productivity and technical capacity**, the retention of “knowledge workers” is the key to success in the new economic environment, Large investments in personnel are required, and they can best be secured by companies able to retain a skilled and motivated workforce in a way that takes into account their specific context and culture⁵.

Knowledge and Information

Knowledge is the ability to (1) make effective decisions and (2) take effective action. Knowledge Management is not Information Management;

- **Information** is “**know what**”. Information Management is “the provision of the right information to the right people at the right time”.
- **Knowledge** is “**know how**”. Knowledge management provides not just information, but insight, guidance, experience and know-how, for the purpose of decision support and

⁴ O’Hare et al., 2014, p.6.

⁵ Gertler, 2003; Wickramansinghe and Sharma, 2005.

effective action.
Knowledge is “stored in heads”, while Information is “stored in hard disks”.

B What does the Green Help Desk Do?

Formally, the Green Help Desk (GHD) is a “business support unit” that strives to serve at the forefront of the effort to strengthen national capacities on developing green production sectors. It is to operate as a “One Stop Shops” and first interface to support the move of private enterprise in Green Sectors, be it through starting a Green Business or by “greening their activities”.

To perform this mission, the Green Help-Desk (GHD) will therefore focus on **Knowledge Management**. Key to its operation is a “2-way learning” approach. This is because, in the new context, information cannot be conceived as “one way”. It is a dual phase, “2-way learning”, process:

1. **Define** the “vision”: what services do YOU want to deliver to users?
 - a. You have to first define what you want the Green Help Desk (GHD) to be.
2. **Refine** the “vision”: what services do USERS want you to deliver?
 - a. Once the helpdesk has begun operation you incorporate key feedback from your users, and you refine your “vision” and your “mission”.

C How does the Green Help Desk Carry Out its Work?

This way, the GHD will constantly grow and renew itself. It is vital to do, because the Green Economy (GE) requires the adaptation of techniques and technologies that are constantly renewed and being reinvented. The guideline is therefore divided into four sections;

1. Vision and Implementation; “*What do we want to do and How?*”
 - a. Helpdesk Mission;
 - b. Needs Formulation: Identification of the Audience, the needs, the vision;
 - c. Scope Definition;
 - d. Scope Management.
2. Vision and Implementation; “*How do we do it?*”
 - a. Knowledge Management;
 - b. Case-Based Reasoning.
3. Helpdesk Organization; “*Who’s doing what?*”
 - a. Overall Structure;
 - b. Stakeholder Management;
 - c. Resource Management;
 - d. Information Organization.
4. Needs Identification; “*What do we need?*”
 - a. Data Gathering;
 - b. Information Classification;
 - c. Information Delivery Structure: Standardization.
5. Helpdesk Service; “*What do we know?*”
 - a. Prioritization;

- b. Procedures;
- c. Quality Control and Management;
- d. Research and Development: Learning and "Feeding Back".

II. PHASE 1: FOUNDATION OF THE GREEN HELP DESK

A Green Helpdesk Mission: “What Do We Want?”

The Green Help-Desk (GHD) has 2 objectives:

1. A **primary** objective to provide assistance on Green Economy tools and techniques to the various stakeholders involved in the productive sectors of the economy, in industry, agriculture, and services;
2. A **secondary** objective to inform on the needs and priorities of the various economic actors.

This means that the GHD would serve as a regional focus, a "nerve center" for all activities necessary to support the transition towards a Green Economy. Before the GHD starts formal operations, is a good idea to define “scope of operations”. This scope is determined from the following questions:

- What are the objectives of the GHD sponsor organization?
- What are the goals of the GHD? What types of businesses does it need to support?
- What are the main tasks that the GHD will undertake?
- What are the resources available to the GHD to carry out its mission? This includes manpower, budget, and time constraints (schedule).

At the very least, the GHD needs to:

1. Facilitate a network of relevant experts and interested institutions. This will define the type of operations that the GHD will undertake;
2. Establish a Knowledge Base (KB) of financing schemes, regulations, as well as support policies, relevant studies, and best practices and showcases. This will specifically narrow down the scope of technologies and markets that the GHD will cover.

1 Scope of Operations

For more expanded scope of operations, the Green Help Desk (GHD) will carry out its mission through the following actions:

1. Collecting and disseminating information on Green Economy (GE), with a particular focus on the Green businesses that are essential for Green Growth (GG).
 - a. Depending of the means available, this information can go from Policy tools, Sources of Financing, to Tools, Techniques, and Technologies.
 - b. Conducting surveys on financing schemes, regulations, as well as support policies for green production and trade.
2. Serve as a networking platform;
 - a. Facilitate a network of experts and institutions in the host countries that are specialized in Green Productive Sectors related issues
 - b. Create a platform for matching green investors and venture capital with green businesses in the region. If this is desired, this would allow the GHD to serve as a platform to develop and implement new projects and initiatives
3. Assist capacity building by:

- a. Organizing training of trainers and technical training and workshops on various topics of green developments, covering such topics as energy efficiency, sustainable production and consumption, climate change mitigation and adaptation, or cleaner production,
- b. Conduct studies to support decision making by central and local governments and regional, international organizations,
- c. Gathering and dissemination of best practices and show cases

Project Scope as a "box"

Any project's scope is a "box" whose "sides" define what is relevant to the GHD from that which is irrelevant. The "sides" of the "box" define the **High-Level Scope**, which has two main components:

- **Deliverables:** What to do. Basically, the GHD has to deliver to both (1) the users, and (2) sponsor organization. Defining the deliverables goes a long way toward defining the overall scope of the GHD.
- **Boundaries:** What **not** to do. This is described by a "Boundary statement" that separates the things that applicable to the GHD from those areas that are out of scope.

2 Market and Technology Scope

The transition to Green Patterns of Production will largely depend on the business environment of the GHD region or country of operation. This is not least because the implementation of "Eco-Innovation is a challenging process and will not be suitable for all SMEs⁶". It is therefore necessary to first identify the relevant companies in the GHD's region.

There is no need for direct contact with businesses at this stage. What is needed is a "desk research" that uses existing information. This research is done by developing credible and compelling "marketing message" that is most applicable to this industrial sectors and market. To do so, it is important to understand the sector's main challenges and opportunities:

- Of the major challenges faced by this industrial sectors or market, which ones are related to sustainability? This means finding the industrial sectors or business:
 - That can best benefit from the Eco-Innovations needed for the transition to the Green Economy;
 - That are limited by their lack of Eco-Efficiency.
- How is the competitive landscape changing?
 - Is Eco-Efficiency playing a role in this change?
 - What are the changes in either consumer attitudes or industry expectations?
 - What are the emerging technologies in this market.
- How is the regulatory landscape changing?

⁶ O'Hare et al., 2014, p.14.

B Green Helpdesk Operation: “How do We do it?”

Neither the mission nor the structure of the GHD can remain static. This is for two reasons; (1) the specific operation may vary from region to region, because of each region’s specificity, and the pace of technological change is so fast that the transition is necessarily dynamic.

The helpdesk will therefore grow and evolve over time. Every time a new “case” comes into the Green Help Desk (GHD), it is resolved in a way to allow for “feedback” mechanisms. This ensures that the GHD can quickly adapt and change its scope as needed.

Knowledge is at the heart of the Green Help Desk (GHD). The delivery of knowledge is therefore the key function. This means that the effective operation of the GHD requires two key elements (1) Knowledge Management, and (2) knowledge delivery.

1 Knowledge Management: Simple and Practical Tools

A successful implementation of Knowledge Management starts with the proper implementation of simple tools. There is no immediate need for more advanced information technology tools. Proper Knowledge Management starts with some simple steps:

1. Communication protocols; it’s not just e-mail;
 - a. If you have to use emails, focus on targeted, narrowly focused mailing lists;
 - b. Do not send “daily” or “weekly” emails. Regular emails are often ignored. Better to send a “digest” whenever there is enough information worth sending;
 - c. Use posts on “closed” intranet or web pages; the simplest social network allow you to create for specific pages that are not open to the public. But confidentiality could be a problem.
2. Shared Network Drives: those are simple and effective tools, but they become often cluttered.
 - a. Organise it in a standardised way, with proper protocols for posting, deleting, and archiving;
 - b. The classification system should be known to all.
3. Listing “who’s who” and “who does what”
 - a. Updated list of Service Providers and Experts on Roster.
4. Use a blog as a Newsletter. The dynamic information is better set up as a blog, where the posts would serve as the Newsletter. This has many advantages:
 - a. The information is easily accessible, indexed, and searchable;
 - b. It allows for comments from registered users;
 - c. Older posts can be easily updated to reflect changes in technology or new information;
 - d. It provides “context at your fingertips”, as users can easily link up to other sites or downloadable information.

Setting up a Blog Newsletter

1. Choose the “**platform**”; there are tools like WordPress. They allow you to choose from many different layouts and themes, add pictures/images, categorize blog posts and create custom menus, and moderate who can comment and share.

2. **Free is not Free**; there are free tools such as Blogger and tumblr, but they have the following restrictions;
 - you don't get your own domain, only a sub-domain;
 - they restrict the amount of themes and layouts;
 - you have no control over it;
 - it is not easy to create custom menus

2 Case-Based Reasoning

In the context of the Green Help Desk, the best way to deliver services is the "Case-Based Reasoning" (CBR) approach. The CBR approach is based on cases, or "tickets".

1. Each case is treated as a "ticket".
 - a. The person who responds to the user is defined as the "Solution Provider" (SP);
 - b. Every time a new case comes in, a "ticket" is assigned to it;
 - c. The case is clearly formulated, to identify:
 - i. The user's "stated need", what they tell you about their problem.
 - ii. Any other "needs"; Sometimes, users' "stated need" do not tell you the "whole story". You need more information to ensure that the right problem is being addressed.
 - d. It is critical at this step to determine whether the case is relevant to the mission of the GHD. A key action of any Help-Desk is **Choosing What Not to Do**. Such a prioritization is critical to the successful operation of the Help-Desk.
2. The "ticket" can then proceed towards resolution. it follows a path along four (4) key milestones; "retrieve", "reuse", "revise", "retain";
 - a. Two things can happen, depending on whether there is a similar solved case in the GHD database.
 - i. **Retrieve and Reuse**: If a similar case exists, the SP compares similarities and differences and then outlines and documents them. The "lessons learned" are then provided to the user.
 - ii. **Revise**: if there is no similar case, the SP needs to (1) find the appropriate experts, (2) coordinate between them and the user to develop a solution, (3) document the solution, adding it to the "case database"
3. The "ticket" is closed;
 - a. The SP receives the user's feedback and documents it, to ensure that the case was properly resolved.
 - b. **Retain**: The SP Updates and/or correct the case in the case database, the GHD's "Knowledge Base" (KB)

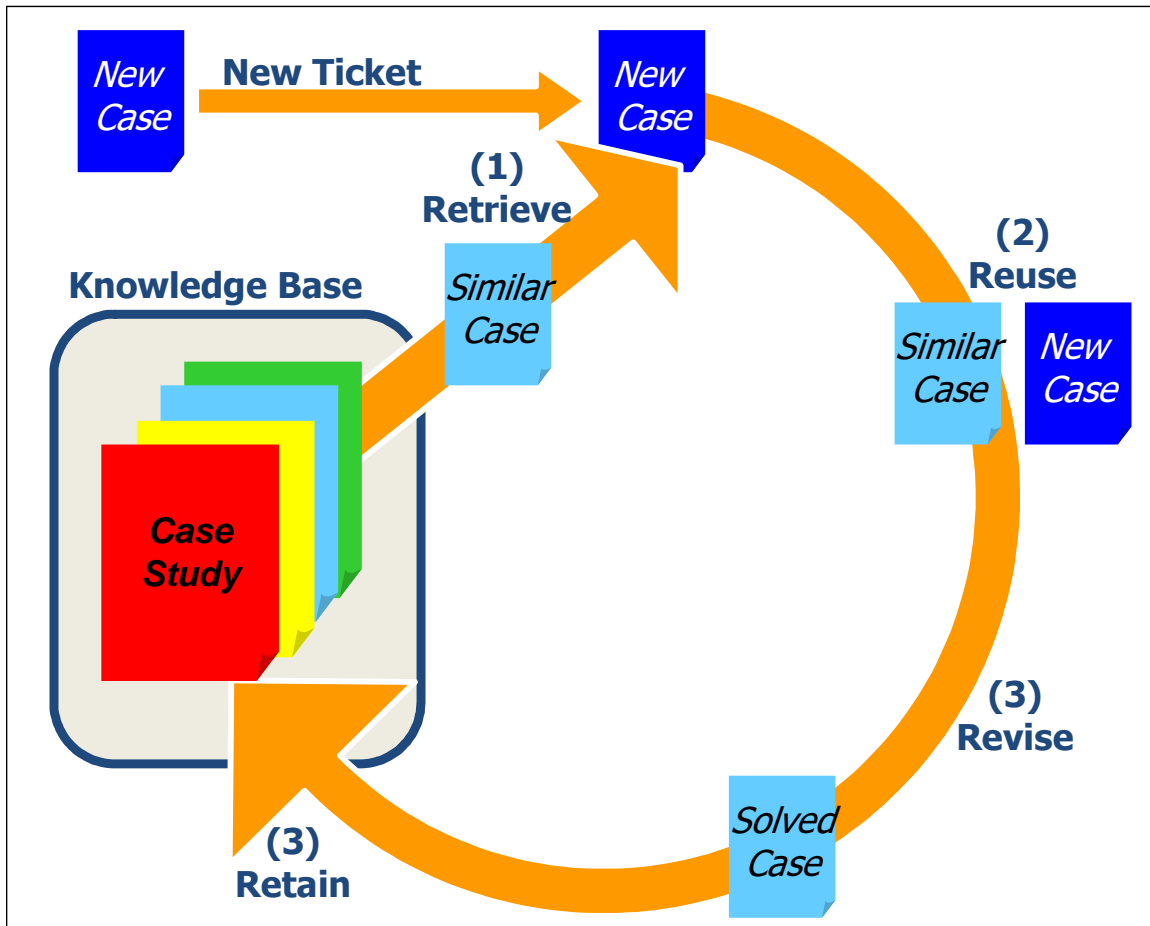


Figure 1. Case-Based Reasoning (CBR).

Along each step, the cases are updated to reflect the feedback from the customers, and the changes are reflected into the database.

C Helpdesk Organization: “Who’s Doing What?”

The Organization of the Green Help Desk (GHD) will be largely defined by three components: activities, stakeholders, and resources.

The most critical for the GHD are the stakeholders, more specifically the businesses who would rely on its services. Those users are treated as customers. Those customers are found in a variety of sectors of activity, and then “recruited” through a variety of tools and techniques. Those customers are identified in stages, by first determining the target industry, then the potential partners, and then the main customers.

1 What is the Target Industry?

A “desk research” needs to be carried out using existing information. This research is done to answer the following key questions on the main industrial sectors and markets:

- What are the main industrial sectors and markets?
 - Those sectors can be listed in a standard format.
 - Additional data can be obtained from national or regional governmental bodies, trade associations, Non-Governmental Organizations (NGO), official publications such as National Development Plans... as per Appendix “B.Sources of Data”.
- What are the relevant businesses in those main industrial sectors and markets? This means identifying the industrial sectors or businesses:
 - Who is the GHD or the sponsor currently collaborating with?
 - That tend to be “early adopters”. Those are companies whose business culture leads them to embrace new technology or ideas before most others in their sector of activity. Also known also as “lighthouse customers”⁷, they are not motivated by risk-taking, but by the desire to gain new advantage in business. To do so, they are often willing to pay more to purchase new equipment or to implement new processes. They generally seek enhanced market penetration through either (1) “tangible” gains such as improved efficiency, increased cost-effectiveness, or (2) “intangible” advantages such as enhanced visibility or goodwill.
- What businesses are likely to be most motivated? In general, there is a higher demand for the Eco-Innovations of the Green Economy in industries with high direct environmental impacts.
- What sectors are prioritized by government policy or by funding agencies such as foreign donors and/or NGOs?

2 Who are the Potential Partners?

The success and growth of the GHD will depend on building partnerships with the stakeholders that might be able to support its Eco-Innovation activity through information, advice, marketing, or funding. In some cases, it may even be beneficial to joint service offering. Such stakeholders tend to be development agencies, trade organizations, ministries, financing organizations, or research institutes.

- Many development agencies are active in the ESCWA Region, and they can be essential to regional, national or international sources of Green Funding.

⁷ Individual early adopters are often referred to as “trendsetters” (Rogers, 2003).

- Trade organizations are a useful source of export and trade data. They can both help identify the major sectors of any country, but they can also be an effective partner or sponsor of the GHD.
- The main ministries that would be interested in the GHD operation are those in charge of commerce or industry. Some of them often already provide support for Small and Medium Enterprises (SMEs) such as providing help such as business mentoring, access to finance, ...etc.
- There are sources that are increasingly offering “Green Funds”. They can help identify the relevant key issues when approaching clients, as they already know about the expected return on investment, payback period, risk management ...etc.
- Many research institutes in academia who have Research and Development (R&D) facilities and relevant technical know-how. At the very least, they can provide a “pool” of experts that the GHD can rely on in its effort to support clients. In some cases, they can also serve as an R&D for SMEs who would not otherwise have the budget to carry out such activities.

As the GHD approaches those institutions, it would need to develop specific types of partnerships, each suited to the type of institution and the services needed. There are three general types

1. The GHD can find “**Channel Partners**” among other institutions that have missions similar to those of the GHD. An example of such institutions are development agencies and trade organizations, and the GHD will focus on leveraging comparative advantages and finding value-added cooperation.
2. For added technical value, the GHD would need to enter in agreement with “**Solution Development Partners**”. Those partners would design and specify specific business and technical solutions, and could be recruited amongst business practitioners and research institutes and academics. For further strategic outlook, research institutes and academics could also be recruited into a “**Technology Partner Program**” that strives to outline new trends in Eco-Innovation. This will have the added benefit of providing feedback that would inform key policy makers on Green Economy Issues.
3. As financial institutions move into providing Green Finance, the GHD would strive to enter with them into a “**Funding Partner Program**”. This would focus on developing specific financial templates for Green Loans to businesses.

3 Who are the Main Customers?

The companies in the target markets can now be identified.

This can best be done through trade associations, or through relevant governments agencies or Non-Governmental Organizations (NGOs). Trade or industrial associations are often those who are the most active in supporting their members and offering new services. They are often accustomed to initiating projects that address sector-wide challenges or opportunities, and may even partner or sponsor the GHD. At the very least, they may help provide new contacts. At most, they can help reinforce existing contacts, especially through coordinated marketing events such as:

- Seminars, to which representatives from your target are invited.
- Provide a lead or an introduction for either a “White Paper” or a market-specific presentations about the drivers and opportunities for Eco-Innovation and the Green Economy within the business’ sector of activity.

When approaching potential customers for Eco-Innovation, two important items need to be identified.

1. First, a distinction should be made amongst the types of innovation that they need; is it a radical innovation, or an incremental change in their business? In general, there are three kinds of eco-innovations, each with a different impact on a business' products and processes⁸:
 - Component addition: This is done to improve quality while not necessarily changing the business or production process;
 - Sub-system change: The implementation of some Green Technologies still keep the overall business or production process intact;
 - System change: This may be the only way forward in some cases, and leads to an overhaul of the entire system of production. An example is the shift from “linear systems” of production to “closed loop systems” in which waste becomes input to new products.
2. Second, identify the driving-forces for Eco-Innovation motivating the target customer. Motivational factors can either “push” the business away from “Brown Economy” or “pull” him towards the “Green Economy”;
 - Push Factors are such things as resource prices, environmental expenditures, regulations in the businesses target market;
 - Pull Factors are related to cost savings and the potential for new markets opened up by environmental innovations.

Table 1. ENVIRONMENTAL CONSIDERATIONS AND THE BUSINESS CASE FOR ECO-INNOVATION.⁹

Life-Cycle Stage	Environmental Consideration	Business Case
Resource extraction	Reduce environmental pressures and impacts by limiting extraction of virgin resources and by limiting “unused” extraction	Consider renewable and secondary resources (circular economy) Reduce cost by improving efficiency of extraction Comply with and anticipate new regulations Improve your reputation CSR (Corporate Social Responsibility)
Manufacture	Use fewer resources, including energy; Use materials with less environmental impacts (substitutes)	Produce less pollution and waste; Reduce production costs by improving material and energy productivity and by material substitution; Build resilience to changes in commodity prices and resource supply; Increase turnover and profits from sales of resource-efficient products and services; Comply with and anticipate new regulations (including eco-design)
Distribution	Reduce impacts, for example through: better packaging design, reuse, recycling, Fuel and energy use reduction in transportation and storage	Cost reduction; Regulatory compliance
Use	Use less resources, including materials, energy, land and water; Cause less pollution and waste.	Shift to selling services from products; Improve reputation and customer relations; Comply with and anticipate new regulations

⁸ Boons et al., 2013.

⁹ EIO-CfSD, 2013, p.11.

End of Life	Reduce costs of waste disposal	Develop and sell novel products and materials from waste Reduce costs by reusing, recovering or recycling resources from waste streams (e.g. industrial ecology, C2C / “Cradle to Cradle”); Comply with and anticipate new regulations
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D Information Organization: “What do We Need?”

The core of the Green Help Desk (GHD) is its Knowledge Base (KB). This KB is constantly build and rebuilt through a three stage process. First, the needs are identified, based either on a customer contact or the anticipation of the Service Providers (SP). Second, the data is gathered and the information collected and classified by SP and with the help of relevant experts in the various fields of specialization. Finally, the information is delivered to the customer. At this stage, the validity of the information is verified with the customer, and added to the KB.

Whenever a the Green Help Desk (GHD) is approached with a case that meets its Scope of Operations, Service Providers (SP) need to understand the needs. For most casts, a simple “need identification” is sufficient. However, a common issue with many business owners is that they mistakes “symptoms” for problems. The real challenge here is to identify the “core problem” before proceeding. For some business, this may require a “deeper” inquiry, which can only be done through a “Needs Assessment”. In general, Needs Assessment is carried out by the business itself, but the GHD may be called upon to carry out such a service.

Needs are identified though a simple set of questions. The questions are designed not only to understand the user’s business, but also to remind them that any business transition brings in new opportunities, but it also carries costs. It is important that users understand this early on. The transition may require them to recreate their business model in a way that not only makes financial sense, but also meets the requirements for the transition to the Green Economy (GE). There is no “magic list” of questions to ask users, but there is a set of basic users need to answer.

- What is the business issue you need to solve? This means understanding the business challenge by determining¹⁰:
 - The major challenges faced by this market, and the changes in the market landscape (demographics, attitudes, ...)
 - The opportunities are there for eco-innovation to help address these challenges?
 - Changes in the landscape related to:
 - Competition, outlining who is gaining an advantage and why;
 - Technology, outlining new technologies that are emerging both in this market and in adjacent markets;
 - Policy Making, describing enabling/hindering environmental legislation or government policies.
 - Any past or potential supply-chain disruptions

¹⁰ O’Hare et al., 2014, p.16.

- What is it worth to you to solve it? The answer to this question should focus on the entire life cycle of the product, considering¹¹:
 - The most significant resources (energy or materials) consumed throughout the product life cycle;
 - The sources of resource waste or underutilization;
 - The sources of pollution being generated, with a view to determine either (1) how they can be prevented from impacting the environment or human health, or (2) any less damaging alternatives;
 - The impact of the product value chain on local stakeholders
- How much new business do you expect/need? This will need to reflect:
 - The impact of the value chain of the product's life-cycle on local stakeholders;
 - How to extract/derive greater value across the entire product life-cycle.
- What is your time to market?
- What are the cost-savings that you expect/desire?
- How much more revenue are you planning?
- What is the extra cost of implementing Green Patterns of Production in your business?
- What is the rate of return?

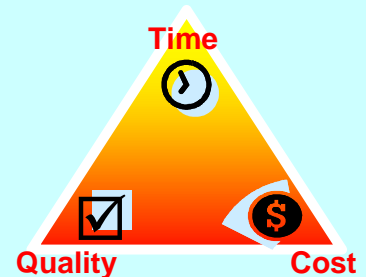
Good, Cheap and Fast: Pick any two

The **Project Management Triangle** defines business constraints of Quality (or scope), Time, and Cost. One side of the triangle cannot be changed without affecting the others.

- **Time** is the schedule during which the project needs to be completed.
- **Cost** refers to the budget available for the project.
- **Scope** defines must be done to produce the project's end result, and it includes the **quality** of the project or the performance.

This illustrates the balance in business undertakings; anything that is done quickly and well will not be cheap. If it is done quickly and cheaply, it will not be of high quality, and if it is done well and cheaply, it will not be fast.

PMI; 2013



E Service Delivery: “What do We Know?”

Proper implementation of the Green Help-Desk (GHD) would help make it a regional focus of the transition towards the Green Economy. Even at early stages, a small GHD can fulfill two roles as a "nerve center" of all related services;

¹¹ O'Hare et al., 2014, p.20.

1. A primary mission of "fast response" in which it would log, document, and monitor the cases to which it would offer both temporary and permanent solutions,
2. A link between industry and experts in the various fields of interest; bridge between those who need to "apply" Green Solutions (the industrial sector) and those who "develop" them (researchers and Green Technology developers).

This dual role defines the "service delivery" that the GHD would perform. The service desk would treat the cases following a "trouble-ticket" approach. In this approach, as a case is submitted,

1. "Triage" the cases, prioritizing them based on needs and resources, in order to:
 - a. Apply standard procedures to resolve, and document the process;
 - b. Track the impact of the implementation and its progress.
2. Prioritize cases that it will use to (1) build its database, and (2) improve the database through customer feedback.

1 Fast Response?

One way to provide 24/7 Service¹² is through a list of downloadable case histories or "Frequently Answered Questions" (FAQ). Such a "**self-service**" option will also ease the workload of the Service Providers (SP). The FAQ will be build from the information in the Knowledge Base (KB). This information comes from three types of sources;

1. Published or publicly available **Expert Findings and Information** that is specifically relevant to the case considered. Those can be from either academics or business/industrial practitioners. The applicability of this information is demonstrated, either through practical applications in actual business environment or through scientific experiments.
2. **Collected Knowledge** that is identified either by the SP or the GHD's associated experts, then contextualized, extracted, gathered, and synthesized in an easily understandable format.
3. Current **Best Practices** on Green patterns of production and consumption.

What is a Case Study/Case History?

A Case Study is any practical example of application of Green Economy (GE) in an business setting, in a business similar to that of the user. It has the following characteristics;

- It highlights the core problem/issue;
- It describes the strategy to solve it. The focus is on "problem-management", not on providing a "clear and bounded solution";
- May include supporting documents.

2 Data Quality Control and Management

In order to ensure Quality of service at the GHD, it is necessary to measure, assess, and ensure good performance. This is done through analysis of the information obtained by two methods¹³;

1. Using the "performance metrics" in the **Tracking Database** such as average length of time to close tickets, number of calls typically logged during a particular period of time, which staff are handling the most calls...etc. Two factors are important in this regard;

¹² A service that is available full-time.

¹³ Bird, 2000.

- a. **Shared Responsibility** among all stakeholders by ensuring that everyone is involved in reviewing performance data on an ongoing basis, and in taking responsibility for it.
- b. The evaluation of the metrics should be done “**in context**”, the better to recognize and understand the complexity of their meaning.
2. Designing Survey Instruments. Those would serve as yet another feedback mechanism to assess the quality of service. To be effective, they need to;
 - a. Allow for a **mixture** of both types of responses;
 - **Quantitative**: useful when aggregating the results. In those types of responses, it is essential not to allow for “medium” responses, by providing odd-numbered range (use a range from 1 to 6 instead of 1 to 5).
 - **Qualitative**: they allow for unexpected answers, and could provide the most insight.
 - b. Collect some “**demographic**” information, to facilitated the categorization of responses. For example, within a company, some departments may perceive better quality than others, so it would be useful to know the respondents department.
 - c. The most important part of the survey design is to **involve** the GHD staff, not only to ensure that they are not “threatened” by the survey, but also because they know the “customer base” better than most.

However, those tools will have limited impact without proper management support. This support can be demonstrated through practical measures such as:

1. When the GHD becomes large enough, it is important to ensure some measure of “**job rotation**” of SP’s, making sure the workforce remains multi-skilled. While this will require more training for personnel, it would serve to empower them further to deliver faster, more “fine grained” service.
2. **Awards and Incentives** that are geared to emphasize teamwork rather than merely focusing on individual achievement.

Capturing “Tacit Knowledge”

Key to the operation of the GHD is the storage and transmission of information in a standardized manner. Even in the case of a single-person operation, the flood of information can quickly become overwhelming. To avoid losing the “tacit knowledge” gained by various Service Providers, there are some simple practical steps:

- Systematic notes after each interviews/meetings, constructed as “handover notes” that could be shared with everyone concerned;
- An “information package” developed for each user/customer. This will not only help track infrequent users, but it would also help in any eventual handovers;
- It should be a requirement to systematically have a few informal meetings with key management personnel in the sponsor organization and, in the case of a handover, with one’s predecessor;
- Balance e-mails with face-to-face meetings, maybe focusing on weekly Thematic meetings with various stakeholders in which experiences are discussed;

(UNICEF-ROSA, 2008, p.68)

III. CASE HISTORY

A Case Statement:

Cardco, a cardboard manufacturer, had an unforeseen waste problem when it decided to incorporate recycled materials into its production line. It acquires its raw material from CleanCo, a waste collection company. It was agreed that CleanCo would deliver daily to its premises 100 tons of batches of pre-sorted paper and carton. However, the delivered batches often included 30% of plastic constituents of various types (polyethylene, masking tape, foam, low PVC, laminated paper with a polypropylene film...), which force CardCo's to carry out some additional sorting of its own.

This creates additional costs for CardCo's, and decreases dramatically the cost effectiveness of incorporating recycled materials in its production. CardCo is not sure how to proceed because of the following reasons;

1. Redesigning its production away from the use of recycled material is not practical, as CardCo has already committed many investments into the redesign of its industrial processes. Among them is a commitment CardCo to one of its clients, CoffeCo, a chain of coffee shops, to deliver carton products made of recycled materials. This agreement is part of a strategic diversification.
2. Management cannot terminate the agreement with CleanCo. Of all local suppliers, CleanCo is the only one able to deliver the required amounts of pre-sorted paper and carton, and it is already struggling to meet demand. Furthermore, CardCo's strategic diversification is proving successful, thus creating the need for larger amounts.
3. CardCo has been "post sorting" the plastics, and has considered incorporating them into its manufacturing process. This is because its processes needs high temperature steam, produced by a specially designed burner. However, while its burners can generate up to 800 °C of heat, burning those types of plastics would require at least 1,200 °C.

B Case Analysis:

CardCo has a fundamental problem with its "value chain". Initially, while redesigning its production process, it had assumed that all its partners along the "value chain" would adhere to a "holistic life-cycle perspective" with no "burden shifting"¹⁴. However, CleanCo had "shifted the burden" on them because of its inability to effectively sort the batches of paper and carton.

The solution to the case can only be multidisciplinary, involving the following:

1. The process that CardCo has been using to "post sort" the plastics needs to be investigated to see if improvements can be made to decrease costs and improve its efficiency.
2. The burners need to be redesigned to allow them to reach at least 1,200 °C.

The solution therefore involves multiple angles of approach and the coordination of various specialists;

1. The processes need to be investigated by a waste management specialist:
 - a. The material available to CardCo is at two different "reuse" stages of the Waste Hierarchy; while the carton and paper are recoverable as materials, the plastics needs to be recovered as energy.
 - b. The GHD to

¹⁴ EPA, 2010.

- i. **Recruit** CleanCo as a customer, since it appears that its processes need to be improved. However, businesses such as CleanCo face a fundamental limitation; they can only rely on “end-of-pipe solutions” in which it sorts the waste “post collection”.
 - ii. **Seek Partners** who are working to advocate for waste management. Public authorities need to adopt more coherent waste management strategies based on an integrated approach that takes into account the full “Waste Hierarchy”.
2. An engineering specialists needs to investigate the burners and determine the necessary modifications or redesign.

C Solution Outline

The solution to the case involves the following:

1. The process that CardCo has been using to “post sort” the plastics needs to be investigated to see if improvements can be made to decrease costs and improve its efficiency.
2. The burners need to be redesigned to allow them to reach at least 1,200 °C.

The solution can only be multidisciplinary, and therefore involves multiple angles of approach and the coordination of various specialists;

1. The processes need to be investigated by a waste management specialist who will investigate how best to “post-sort” the material available to CardCo.
2. An engineering specialists needs to investigate the burners and determine the necessary modifications or redesign.
3. The GHD could use the case to expand further by;
 - a. **Recruiting** CleanCo as a customer, since it appears that its processes need to be improved. However, businesses such as CleanCo face a fundamental limitation; they can only rely on “end-of-pipe solutions” in which it sorts the waste “post collection”.
 - b. **Seeking Partners** who are working to advocate for waste management. Public authorities need to adopt more coherent waste management strategies based on an integrated approach that takes into account the full “Waste Hierarchy”.

D Outcome

The solution to the case involved a multidisciplinary approach that involves the coordination of various specialists;

1. The waste management specialist Has determined that the material available to CardCo is at two different “reuse” stages of the Waste Hierarchy;
 - a. The carton and paper are recoverable as materials,
 - b. The plastics needs to be recovered as energy.
2. The engineer has carried out their energy audit to determine how to improve the burners.
 - a. The goal is to reach a temperature of at least 1200 °C and a consumption of 2 tons of plastic waste per hour.
 - b. A secondary target was to decrease the company’s yearly energy bill, which amounts to 20% of the operating costs of companies in such a line of business.

The final solution focused on those two aspects;

1. The waste management has been improved, and a small “sorting plant” was designed. This allowed for a better sorting of the two different types of materials
2. The boiler was redesigned and modified with the following features;
 - c. It reaches a temperature in excess of 1200 °C, with a high consumption of waste.
 - d. Waste heat is collected and reused into CardCo’s recycling manufacturing process that relies on high temperature steam. This results in further energy savings, as the burner now produces the steam needed.
 - e. The high temperature of the burner now allows CardCo to market its services to burn bio-hazard waste products, provided the appropriate regulatory requirements have been met.

IV. PHASE 2: EXPANDING GREEN HELP DESK

As the Green Help Desk (GHD) expands, it will provide more extensive services to businesses as they move towards “Sustainable Patterns of Production and Consumption”. This transition would allow businesses to decrease waste of resources and improved employee productivity, thus **reducing production costs across the value chain**. Properly implemented, the transition would allow businesses to not only to hold on to market share, but also to reach **new and emerging markets**. This means that the GHD will have to grow with the needs of the businesses, especially in the context of the ever-changing technological environment of the Green Economy. On the long-term, this has implications for both businesses and the GHD.

For businesses, the transition towards has at least four key requirements;

1. A **change in business strategy** that is based on “a conscious decision and commitment to embed sustainability¹⁵” into every aspect of the operations of the company.
2. A **holistic approach** that considers “all phases of the product life cycle, from extraction of raw materials through to disposal at end of life¹⁵”, thus ensuring that any problems are not simply shifted “from one stakeholder or phase of the life cycle to another”.
3. **Cooperation** across the entire **value chain** that is based on a perspective that focuses on the life cycle of a product or service. This means that businesses need to integrate their operations closer with their suppliers, customers and other new partners. This is essential, as “no single actor has full, direct control¹⁵” over sustainability issues within their value chain that “arise at various points in the life cycle of a product”.
4. Take into account the **social and environmental aspect** of sustainability. In the new economic context, companies need to retain the technical knowledge of employees in order to remain competitive. In the ever more dynamic environment, this can best be done through an outlook that goes beyond a focus on salary and benefits, to **consider employees and business partners as assets¹⁶**. This requires taking into account the wider social environment in which their employees live.

For the Green Help Desk, there is one main objective; to **maintain its relevance** as businesses move towards “Sustainable Patterns of Production and Consumption” and implement more and more Eco-Innovative tools and techniques. Indeed, as businesses learn and grow, so should the GHD, in order to keep “a step ahead” of the technological trends, and thus continue to offer value for its business customers.

This can only come about through an iterative “learning” approach that takes into account a detailed formulation of needs, and the necessities of effective operational management to constantly learns from both successes and failures. It is there that the Green Help Desk (GHD) can really provide added value to businesses;

1. On the “outside”, it will work with businesses to continually observe, at every stage of the business process;
 - a. Understanding and validating the business needs (“What do We Want”). This is done by using the “Trouble Ticket” Approach to gain information that feeds into Knowledge Management. As the GHD grows, it will need to be structure along a Tiered Structure.
 - b. Helping Businesses reevaluate:

¹⁵ O’Hare et al., 2014, p.15.

¹⁶ Bartlett and Ghoshal, 2002.

- i. Their operational processes (“Who’s Doing What?”), by validating their models in the context of the Green Economy and the need for Eco-Innovation. In this context, a successful GHD will treat its users as long-term customers. However, to do so, the GHD will have to implement resource management policies that allow it to retain the “implicit knowledge” of its personnel.
 - ii. Their operational needs (“What do We Need?”). This would require more advanced analysis tools, such as more frequent and detailed Needs Assessment techniques.
2. On the “inside”, it will need to reappraise its own Knowledge Base (KB), by constantly verifying “What do We Know”. This is done by more advanced Data Gathering and Information Classification techniques, and a standardized Information Delivery Structure that clearly identifies and documents Content Sources.

A “What Do We Want?”

In the unique context of the Transition to the Green Economy (GE), the main aim of GHD staff is key to the operation. Since the beginning, the staff would have been working to establish a Knowledge Base (KB) of cases of implementation of Eco-Innovation techniques amongst their customers. As they document issues the raised and resolved, they could develop a better understanding of the optimal implementation of eco-innovation in the business environment of their zone of operation.

However, this can only be done through proper implementation of the “Trouble Ticket” Approach and an expansion of Knowledge Management tools and techniques. Furthermore, this can only be implemented in the context of a growing GHD, if adopts the appropriate business format; a Tiered Structure.

1 The “Trouble Ticket” Approach

The "trouble-ticket" approach largely rest on the allocation "access rights" to the different persons interacting within the structure of the GHD, in a manner similar to how a computer administration would allocate access privileges on their network. In this manner, each person working in the GHD would be assigned a specific "role", defined within the framework of the interactions as a case is shepherded through the stages; submit, accept, reject, analyse, respond, ...etc.

- The core principle is the "ownership" of a case, i.e. that specific persons would be responsible for its resolution and for the follow-up with the HelpDesk customer.
- This "ownership" will be transferred among many stakeholders as the "ticket" moves through the stages of the GHD process.
- For any specific "ticket", ownership will:
 - Be restricted to a single "case manager" who will handle it till it moves to the next phase,
 - Be only transferred to another "case manager" as the case moves from one phase to another.

Each "trouble-ticket" would be a series of stages, depending on how it was addressed;

- Waiting: tickets that have been dormant for a set period of time.
- Overdue: tickets that have been dormant for longer than the set period of time.
- Resolved: tickets that have been resolved and archived.
- Closed: tickets that have been closed unresolved and archived.
- Reopened: a ticket that has been reopened by someone other than the "owner". The status of the trouble ticket is then reset, and the ticket goes through the response process.

2 Knowledge Management

In the Green Help Desk (GHD), any technical assistance would be insufficient without knowledge management, in which all stakeholders are informed about relevant processes. This will also provide the helpdesk with good feedback on the validity of its operations, which will go a long way to helping it identify needed resources and optimize their use.

As the GHD grows, so would its supporting technical infrastructure.

1. At first, the GHD will be at the “beginning stage”, relying on basic knowledge management tools and systems.
2. Then, as the GHD grows, its activities of the Service Desk may grow to include almost all aspects of providing technical support on Green Economy Technologies.

As it grows, the structure of the Green Help Desk (GHD) will remain dependent upon "service needs" and the complexity of the problems that will be considered. Once all those are selected, the most cost-effective structural format can then be selected.

3 Tiered Help Desk Structure

The complexity of the problem will define the structure of the **support organization**. Such a structure usually follows "tiers", each dealing with a complexity level. This goes from a three tier support organization that deals with many problems with various end-users, to a much "flatter" two-tier structure.

- In a **Three-Tier** support organization, a case is routed across three tiers; (1) a primary help-desk at "tier one" that focuses on identifying the appropriate response service levels required for each case, thus allowing it to provide rapid responses to address most cases, (2) a second-level help desk at "tier two" that handles the more complex case that are "filtered up" from the primary help desk. The primary burden of response rests with the "middle tier", the second-level help desk; (3) A third tier comprised of experts, tasked with advising and solving the most difficult cases.
- The **Two-Tier** support organisation is the most adapted to the needs of the Green Helpdesk. In this structure, the primary tier combines the functions of the primary and second tier are merged together, and may incorporate a level of expert support, especially for the most frequent cases. The secondary tier deals provide expert support on an "as needed" basis, dealing with the more infrequent cases.

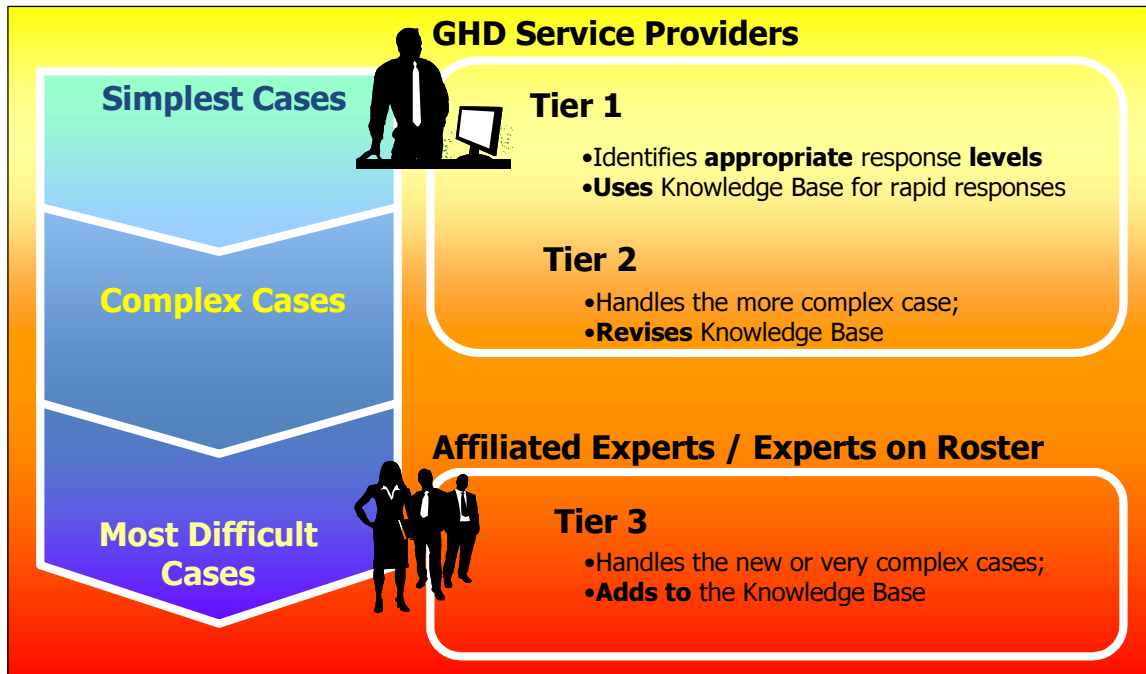


Figure 2. The Help-Desk Operation: Tiers and Support Interaction.

The tiered Help Desk Structure can be implemented along any of three basic structures; (1) Centralised, where contact with users is channelled through a single central structure; (2) Distributed, where various services are distributed across different regions, with some duplication; (3), Virtual, which is basically a structure that is centralised virtually.

1. The **Centralized** Structure allows for streamlined management, better optimization of resources, and therefore has the advantage of reduced costs. However, it would struggle to serve users that are spread across several geographical locations, especially if they need help with different products and services.
2. A **Distributed** Structure would facilitate the handling of a larger and more diverse "pool" of cases, both from a perspective of geography and service needs. However, it is harder to manage or monitor effectively, thus leading to greater operational expense. In addition, it is harder for data and knowledge to flow among the different structures.
3. The **Virtual** Structure allows the helpdesk to benefit from both the efficiencies of the Centralized Structure and the Distributed Structure, by leveraging the power of communication networks and Information Technology (IT) systems.

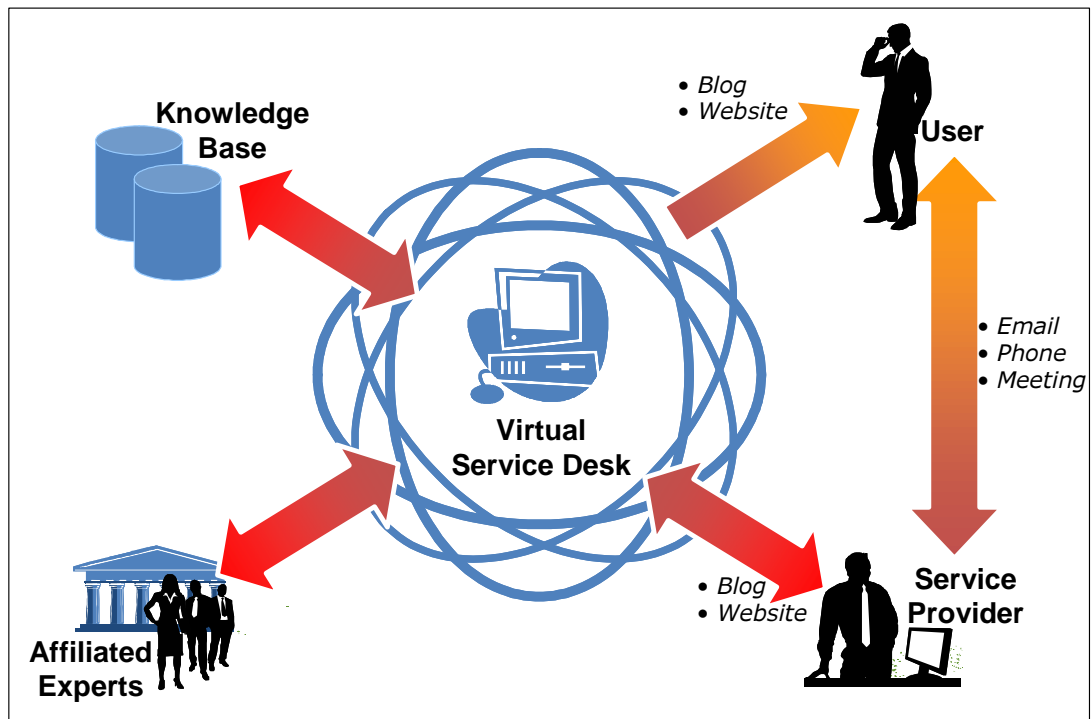


Figure 3. Help Desk Structure: Virtual Help Desk.

It is the Virtual Structure that would better apply in the case of the Green Help Desk. It would allow for a centralized and streamlined management. The use of a centralized knowledge base would avoid unnecessary duplications, thus saving costs. Furthermore, because of the implementation of information technology, the Help Desk could offer customized services to a variety of clients across different sectors of activity, without compromising quality or increasing costs, and without losing focus of its core mission. The implementation of Case-Based Reasoning (CBR) would allow for uniform and consistent quality of service.

Tools for Help Desk Support

There are a series of software tools for Help Desks that can be adapted for the operation of the Green Help Desk. The main ones extend from Customer Relationship Management (CRM) software to offer additional features such as:

- Options for "Task Tracking";
- Data is delocalized (cloud-based data storage_;
- Integrates with email, phone, and social networking tools to provide customer support forums and online Knowledge Base (KB);
- Operates either as Incident Management or Service Desk;
- Alerts, filters, and search functionality;
- Business Rules to automatically assign categories and related actions.

B “Who’s Doing What?”

1 Business Models and the Green Economy

When approaching business, it is important to understand the type of model they follow. It will define how well suited they are to rapid transition to the Green Economy, and thus to find the correct solution “match” for them.

Depending on their abilities, the investment of businesses may extend from simple operational improvements to a more detailed transformation of their production and consumption systems. Those abilities are defined by their business outlook (short-term versus long-term) and the extent of public sector involvement.

Table 2. TRADITIONAL BUSINESS MODELS SUITABLE FOR ECO-INNOVATIONS

		Business Commitment	
		Short-Term	Long-Term
	Minimal	Product-service system	Total cost of ownership
Public Sector Involvement		<ul style="list-style-type: none"> • Function-oriented; • Aims at sustainability of production and consumption; • Focused on service. 	<ul style="list-style-type: none"> • Life-cycle oriented; • Accounting for direct and indirect costs of products; • Aims at calculation of total costs across all projects and processes; • Either product or service.
	Extensive	Public-private partnership	Sustainable Production Chain
		<ul style="list-style-type: none"> • Long-term oriented; • Partnership of government and private sector; • High-Risk projects; • Focus is both social and sustainability. 	<ul style="list-style-type: none"> • Value network concept, with client relation component of business model; • Requires redesign of the business process; • Dual focus: (1) enhance businesses “value-creation potential”; (2) provide new customer solutions.

2 Users as Customers

The GHD users are to be treated as customers in the business sense. Yet it does not follow that “the customer is always right”. While all stakeholders should be listened to, but not all of them add to the overall operation of the GHD. At the very least, not all those who contact the GHD have a valid issue, or one relevant to its mission.

“Put the customer second, put your people first”

The idea that the “customer is always right” is often proven wrong, especially when dealing with people the company cannot please, the company’s loyalty rests with the employees. They are at the “frontline”; not only do they have to deal with customers every day; they are the ones who will still be there once the customer is gone.

“A woman who frequently flew on Southwest Airlines was constantly disappointed with every aspect of the company’s operation, writing a complaint after every flight. When one of her letters was forwarded to Herb Kelleher, CEO of Southwest, by customer relations people, he wrote back in 60 seconds; “Dear Mrs. __, We will miss you. Love, Herb.”

This is an example of Customer Service who knows “how to disagree without being disagreeable”,

realizing that not everything can be “won”. It illustrates how Southwest Airlines actively chooses to trust their people over unreasonable customers. While not tolerating bad employees, they do not tolerate abusive customers, or those whose needs are outside the stated scope of their business. This creates a balance between both service providers and customers, and focus on ensuring on adequately performing the services that can be reasonably performed. (Rosenbluth, H. and McFerrin-Peters, D., 1992:).

While it is important to plan and work for the growth of the GHD, it is more critical to keep an emphasis on quality and the smooth running of its operation. Avoiding a short-term focus on growth of the customer base, would allow the GHD be able to refuse, or even “fire”, some customers whose needs cannot be reasonably met, especially as the GHD grows. This is critical since the main “selling point” of the GHD is its knowledge base, a crucial part of which is the service providers it employs. The approach can be summed up as “**Put the customer second, put your people first**”¹⁷, and has two key advantages;

1. For smaller operations, it allows the GHD to focus on providing the service rather than spending excessive time on addressing the needs of ever-more demanding customers. Rather, the focus should be on positioning oneself as a “sustainability thought leader”¹⁸.
2. For larger operations, it would allow the GHD to empowering Service Providers (SP). This then allows them to become more motivated to:
 - a. **Deliver the appropriate service.** This is critical in the context of the Green Economy (GE) where the information is often difficult to obtain and/or understand. This requires a long-term involvement from the part of the service provider, in addition to more dedication when compared to “conventional” call-centres.
 - b. **Care more about service.** Otherwise, genuinely good service would be “almost impossible”, as “the best customers can hope for is fake good service” that is “courteous on the surface”, with little substance”¹⁹.

Some keys to Good Customer Service

- How do our users define good customer service? What users expect from the GHD?
- Are your user policies outdated?
- Is the user experience consistent?
- What are your customer “pain points”?
 - Develop a “listening” strategy to “monitor” customer conversations, to understand the challenges that customers face, and respond quickly.
 - Note that, while customers may be aware that data is being gathered, the GHD needs to ensure that Service Providers (1) have the right data and (2) knows how to communicate the knowledge of that data to customers.
- Make contact easy, but follow a “pace of communication” that you can afford.

3 Resource Management

The establishment of the Green Help Desk (GHD) and the Knowledge Base (KB) requires a long-term commitment. This therefore requires a clear vision of how to maintain it on an ongoing basis, and ensure it remains relevant and up-to-date.

¹⁷ Rosenbluth and McFerrin-Peters, 1992.

¹⁸ O’Hare et al., 2014, p.6.

¹⁹ Kjeruf, 2014.

In this context, the resource allocation required therefore depends on the extent of “**knowledge engineering**” work that needs to be carried out. The complexity or level of detail of the information provided will thus defines the need for such specialists as technical writers, documentation team. Depending on the mission given to the GHD, there are two options available;

1. **Knowledge Engineering**, based on technical writers and documentation teams. They will aim at simplifying complex and diverse information in an easy-to-understand documentation. This approach is necessary in cases where:
 - a. What are required are both a high level of accuracy and a consistency of style and tone.
 - b. The service being supported does not experience frequent or significant changes.
2. **Demand-Driven Knowledge**, where the “content creation” of the KB is integrated within the support process. This approach is ideal in cases where knowledge is always changing and improving. In order to successfully implement this approach, it is necessary to ensure that there are:
 - a. **Templates** that are pre-defined and clearly structured to guide agents on what information to include;
 - b. **Content Standards** that are well-understood and that explain precisely how to write or edit a KB article.

It is the latter approach that is more applicable in the context of the Green Economy. Indeed, Demand-Driven Knowledge approach is ideal to document the ever-evolving techniques that are at the heart of the drive towards greener patterns for production and consumption.

However, it is possible that, for some specific case, a “blend” of both approaches is required, whereby technical writers produce the “customer-facing” articles, while the support team collectively curates the KB.

4 Operational Management

This type of operation will define has implications for both the systems and the management of the Green Help-Desk. Indeed, the focus is not only on delivering a "question-answer" service as in the case of conventional call-center, but also on building up the strength of the CBR processes. It is this aspect that it is at the heart of the operation of the Help Desk, as it allows it to grow its knowledge base.

- On the **Systems'** side, CBR will rely on technologies that define a set of (1) case characteristics, and then (2) structures them in a way to relate them to both "hard" and "soft" solutions. The expense of developing and maintaining cases can be greatly reduced thanks to a growing set of technical solutions that cover various conventional issues. Those can be adapted to fit the unique mission of the GHD.
- On the **Management** side, the operators will leverage CBR technologies to (1) classify and organize the knowledge gained in different "focus areas", and (2) develop specific solutions as part of a "solution spectrum" of responses. This “solution spectrum” will make-up the backbone of the set of technical solutions that the Help-Desk will rely on to serve its customers.

Key to Proper GHD Operations

Regularity: **The business environment is generally stable, meaning that conditions are generally the same from day to day. This implies that any actions undertaken in the context of the document previous cases will lead very similar outcomes.**

Repeatability: Similar actions taken in a past context will lead to similar actions in the future, in a similar context. This implies both a:

- Measure of **Consistency**, in that the rules that govern the business environment do not change too drastically over time.
- **Guarantee of Adaptivity, meaning that events that take place in the past generally have minor variations over previous conditions, thus making it easy to adapt to the new environment.**

Relevance to the problem that need to be addressed in a way that offers an actionable solution. This means that the activity of the helpdesk should extend beyond that of a mere call-center. Indeed, beyond working to retrieve cases and information, the Help-Desk would strive to

- **Match** the profiles of each "case" with potential solution partners, be it businesses that offer Green Solutions, or technical experts.
- Index **the information, with a view to constitute a larger database of case histories and solutions. Those solutions can be either (1) "hard", i.e. technical/technological solution, or (2) "soft", i.e. the know-how. While the first type would be easy to document and store in a database, the second type of solutions would grow from the interaction of the Help-Desk with the customer base.**

The **timeframe** is important in this case. However, it should be noted that, while a timely response is needed, the Help-Desk operation does not require "real-time", immediate responses. The helpdesk operators only need to record the time frame needed to provide a response, and to provide feedback within this timeframe.

C “What do We Need?”

Needs are determined through a Detailed Needs Assessment. As the GHD grows, it could be called upon to carry out a more a more detailed assessment for some business customers. This would involve a “Gap” Analysis that identifies and classifies priorities, and then highlight problems and shows opportunities.

1 Detailed Needs Assessment

A detailed “Needs Assessment” follows a methodology that determines "gaps" between current conditions and the desired conditions of the customer. This would follow a simple “need chain model” composed of needs and factors;

1. There are four types of needs;
 - a. The **performance** level required for effective and satisfactory Green patterns of production and/or consumption;
 - b. The **Instruments** needed, which can be either a specific technology or an applicable business method that will allow the business to “go green”;
 - c. In many cases, businesses are **conscious** of their needs, and can clearly state them.
 - d. In some cases, businesses have needs that they are not aware of. Those **unconscious** have to be determined by the SP, in coordination with the customer, and should be clearly stated.
2. The main factors considered are;
 - a. **Organizational** needs that can be often expressed quantitatively, such as energy savings, water efficiency...

- b. **Individual** necessities of the various stakeholders within the organization.

A table can then be established to summarize the “Need Chain Model” for the case considered.

Table 3. NEED CHAIN MODEL

		Factors	
		Individual	Organizational
Needs	Performance		
	Instrumental		
	Conscious		
	Unconscious		

2 The “Gap” Analysis

A more detailed needs Assessment is done in four steps; after (1) a “Gap” Analysis, (2) the priorities are identified and their relative importance determined, then (3) problems and/or opportunities are determined. After this is done, a (4) solution can be developed.

1. In the **“Gap” Analysis**, a performance evaluation is made to check actual performance of the business versus both (1) the current performance level of the industry, and (2) the performance level of Green business in similar industries, in other regions or countries.
 - a. The analysis of the **current situation** should not be limited to a focus on the current state of skills, knowledge, and abilities of the company’s personnel. It should also include an analysis of the organizational means, to develop an understanding of what can be achieved practically short to medium term;
 - What are the constraints, both internal and external?
 - What are the current practices in the company?
 - What is the current business climate?
 - b. The **desired situation** is determined to determine if the organizational goals are inline with Green Growth (GG), or how they could be adapted. The analysis will then focus on both (1) the necessary tasks that need to be undertaken and (2) the standards that need to be implemented and followed. It is also necessary to ascertain the ability of current or future personnel to carry out and implement what is needed.
 - c. It is important that effort is made to differentiate between actual needs and perceived needs. In general, the GAP Analysis should focus on identifying:
 - The Problems or deficits that are related to either the company’s “software” (the way of doing things), or “hardware” (the technology infrastructure).
 - Impending changes relevant to the business; while they may not currently appear, they could appear as a result of the transition.

Piloting a transition to Green Patterns of Production?

The best approach for a transition is a stet-by-step “piloting” approach:

- Search for “early adopters” within the business organisation;
- Identify “Pathfinder” projects, where the company can apply new processes that are likely to deliver measurable value. Prioritize the projects most likely to succeed, and expand the experience to other sectors of the company;
- Use the knowledge gained from the pilots to develop standards that are best suited for the

- business organisation;
- Roll-out the changes required by the transition across the entire organization;
- Monitor and support organisation until the transition is complete.

2. The determination of **Priorities** follows the GAP analysis to determine a **hierarchy of needs** amongst all the needs identified. This determination will establish if the identified needs are either real or worth addressing, and specify their importance and urgency in view of the needs and requirements for an effective Green business. This is established by:
 - a. Determining Cost-effectiveness through a cost-benefit analysis;
 - b. Identify the Legal mandates;
 - c. Identify the “sponsors” of the change within the business, to understand both executive commitment and employee motivation;
 - d. Identify the key people involved in the changes;
 - e. Determine the market potential
3. The **problems and/or opportunities** are defined through a performance analysis for both the personnel and the equipment. The focus is intentionally on the internal factors, as the objective here is not to carry out a SWOT Analysis, but to determine enabling factors within the organization. This is determined by a simple evaluation of Personnel, Equipment, and financing:
 - a. Personnel: are they doing their current jobs effectively? Do they know how to do it? Are they trainable to carry out new/different jobs?
 - b. Equipment: is the current equipment work properly for the current work required? Is it efficient? Is it upgradeable and, if not, what other equipments would be needed?
 - c. Financing: what are the main sources of financing available currently? What is the availability of Green Financing that is applicable to the business?

SWOT: Strengths, Weaknesses, Opportunities, Threats

Through the SWOT Analysis, a table is made up to list the factors that affect a company's stated objectives. The table is divided in four quadrants;

- Internal factors that are either helpful (Strengths) or harmful (Weaknesses);
- External factors that are either hindering (Threats) or enabling (Opportunities);

Strengths	Threats
Opportunities	Weaknesses

4. Before developing the possible solution, a sophisticated needs assessment is then carried out through
 - a. It would then be necessary to carry out a PERT²⁰ analysis, especially if the project changes would require a complex program of implementation. At the core of PERT, is the idea of determining the means accomplish a specific project or reach a given goal.

²⁰ “Program Review and Evaluation Technique”; PMI, 2013.

- b. The implementation is then modeled using techniques such as the Critical Path Method²¹ (CPM) to identify the relationships between the many interdependent activities necessary for a transition towards Green businesses practices.
- c. Any transition carries with it its own risks, and so does the transition towards greener business practices. This is especially the case since the innovations required to “go Green” may involve a measure of risks if implemented improperly.
- d. At this stage, a Risk Analysis needs to be carried out to understand and estimate, as much as possible, the risks involved. Formally, the risks can be determined through four generally accepted methods²²;
 - Brainstorming with the customer to obtain a comprehensive list of risks;
 - Trying to reach a consensus of experts through questionnaires;
 - Interviews with experienced stakeholders, which is easily applicable in the context of the GHD,
 - Analyzing the “root cause” of the issue under consideration in order to discover underlying causes. The “root cause analysis” is also necessary before developing any solution for the case considered. .

The extent of involvement of the GHD in those activities would vary, depending on the defined scope and the means available. However, at a minimum, the GHD should carry out simple census of the sources of financing available in their geographical area of operation, to help businesses determine their source of Green Financing that is best suited for them.

D “What Do We Know”?

As a key component of the Green Help Desk, the Knowledge Base (KB) needs to be maintained and constantly updated. This requires a focus on the processes related to **Detailed Needs Formulation** and **Data Gathering and Information Classification**. In addition, because of the necessity to create a “common language” for communication, steps should be taken to standardize of the **Information Delivery Structure** and the **Content Sources**.

1 Detailed Needs Formulation

An effective Green Help Desk (GHD) is more than an information clearinghouse; it is a knowledge management unit. The distinction is important; while information is “know what”, knowledge is “know how”. This means that the GHD is a Knowledge Management (KM) system of People, Process, Tools/Technology, and Systems/Rules that applied systematically to meet clear business objectives.

- The **People** are the Service Providers and the GHD’s Affiliated Experts who seek and share information on the Green Economy.
- Each GHD would need to use standardized **Processes** collecting, validating, recording, and disseminating information.
- Each GHD would use **Tools/Technology** that are most appropriate for its specific context to share and disseminate information. For the context of the GHD, the most flexible and Adapted tools are web-based.

²¹ PMI, 2013.

²² PMI, 2013.

- The people and the process need to be supported by enabling technology, which allows knowledge to be found and accessed wherever it resides (in databases, on the Intranet, in people's heads). IT plays an important role in KM, by providing the technology to allow people to communicate.
- Systems/Rules; without a governance system that promotes and recognizes sharing and the re-use of knowledge, any attempts to introduce KM are going to be a hard struggle.

2 Data Gathering and Information Classification

The formal structure of the KB for the Green Help Desk (GHD) is distinctive because of the breadth and diversity of information related to Green Economy (GE) and Green patterns of production and consumption. There are no simple “A to B” relationships, and the linkages are not necessarily linear. In addition, there is large variation in the accuracy and structure of each element that needs to be included in the KB.

Because of this complex structure, the information gathering goes through three stages before it goes into the KB;

1. **Contextualization**, in which from various sources of information are established.
2. **Content Acquisition**; in which the information is collected from those sources. The collected information and the linkages between the sources are both recorded. At this stage, both confirmation and contradictory information is collected.
3. **The Expert Review Process**, in which the information is reviewed in detail and analyzed.
4. **Write-up**, in which the document is written to offer a synthesis of the collected information. The synthesis is written so that one can still link back to the original source documents.

The KB is a “soft” asset that could easily depreciate with time unless appropriate care is given to its maintenance and upkeep. In this respect, much can be learned from traditional Information Technology (IT) Help-Desks, which follow simple “best practice” tips²³:

1. **Preserve the old**; keep a record of previous version of cases resolutions, or reference article, even if they were superseded by recent work.
 - a. This is important in a context of the Green Economy’s (GE) ever-evolving technical environment, where techniques that are considered obsolete at the present may become relevant as scientific understanding improves.
 - b. In technical/practical terms, this requires the use of a “versioning” software system that automatically keeps a record of changes to the Knowledge Base (KB) of cases. In this “revision control”, the GHD keeps track of incrementally different versions of electronic information. This allows for the possibility of a “roll-back”, to a time before the database changes were made.
2. Focus on **Robustness**, by keeping and updating the case record to identify and classify common known issues, and frequently asked questions. It is therefore crucial that Service Providers (SP) have an incentive to either:
 - a. Add or update the KB of cases,
 - b. Make significant revisions to existing ones.

²³ Zendesk, 2014

3. Allow, and even expect, a level of **imperfections**. It is not necessary to wait to fully document cases before adding them to the KB. The context of the Green Economy (GE) is such that knowledge remains essentially “formative”, and therefore requires a dynamic approach to editing and finalizing. A good example of this is Wikipaedia, which clearly reflects the need for further verification, research, or substantiation²⁴. The online offering of the GHD may therefore be structured as a “WiKi”. The structure of the key elements of the KB would broadly classified in three categories;
 - a. **Glossary**, with short explanations that focus on the smallest element of information in a given domain;
 - b. **Factual**, with more elaborate information about glossary terms. The information in this category is generally both independent of any specific context and timeless.
 - c. Contextual pages, where
 - d. Contextual pages are pages that build onto facts and terms, valid within a project/period/etc.

3 Information Delivery Structure: Standardization

Information in the Knowledge Base (KB) is both similar and different from a reference library.

- Similarly to reference library, the information is made up of “articles” of various types such as text documents, images, spreadsheets and software program, ...etc.
- Unlike a reference library, the information is often interactive.

The structure therefore needs to be standardized in such a way as to facilitate a consistent service delivery. However, the standard should not be so rigid as to restrict the proper provision of service. This dual need is better met by selecting some Service Providers (SP) to play the roles of:

1. Moderators, who will monitor and regulate the online interactions among the various stakeholders. It is they who:
 - a. Decide who can leave comments on individual articles, or whether they can leave any comments by assigning roles to the different stakeholders. If online forums are to be included in the GHD, it is those moderators who will monitor and administer them.
 - b. Track and manage the “News” and “Announcements” section of the online platform of the GHD.
2. Curators are important to the processing of cases. They play an important role, even if the online activity of the GHD remains limited. They play three major roles, by
 - a. Generally acting on behalf of various stakeholders by making sure articles are clear and well-documented, and they track the versioning of each case as it goes through its various resolution phases.
 - b. Carrying out “cross-linking” of any relevant articles. This is essential to enhance the interactivity of the GHD if it is made online.
 - c. Promoting any information that has been newly-added, or has received extensive revision.
 - d. Ensure consistency of formats for submitted document.

²⁴ http://en.wikipedia.org/wiki/Wikipedia:How_to_structure_the_content

Once the GHD has been launched and is operational, the interaction between the SP and the various customers will help define a set of “best practices”. The actual details will depend on each specific implementation. However, because of the diverse stakeholder base, it is important that the information provided avoids using excessively “techie terminology”. The focus should be on remaining as clear and user-friendly as possible.

4 Content Sources

As the Knowledge Base (KB) grows, it becomes increasingly important to rate the **Quality** of the information provided. Formally, an index of **Information Quality (IQ)** can be used to determine the “fitness of the information” provided by the source. This quality determination is not necessarily based on the relative authority of the source, but rather on a set of criteria. Formally, there are formal frameworks developed by such bodies as the “Information Systems Audit and Control Association” (ISACA); the “Control Objectives for Information and Related Technology” (COBIT). However, the purposes of the GHD do not require such an extensive system, at least at the first stage. It is sufficient to ensure that the information gathered meets a simple of criteria;

1. **Verifiability**, whereby the validity of the information can be verified in a reliable manner. It should be noted that this definition makes irrelevant who the Authority of the source is, or whether there is complete consensus.
 - a. **Authority** here is taken to mean a source’s recognized expertise or official status. In the context of the Green Economy (GE). Indeed, Green Growth (GG) is often hindered by patterns of consumption and production that, while unsustainable, are still encouraged and pursued by many practitioners. Those practitioners tend to be well established and entrenched, and their opinions do carry a certain measure of authority.
 - b. The focus should be on “**informed consensus**” rather than simple “**consensus**”. In “informed consensus”, whereby a conclusion is reached through rational deliberation among participants with a sceptical frame of mind. A measure of “**Respectful Insolence**²⁵” should therefore be allowed into the information gathering process, to account for the fact that, while scientific/technical consensus is important, a measure of scepticism remains necessary. Once established, informed consensus is not final; it is always provisional and thus open to re-evaluation provided new verifiable evidence comes to the fore.
2. Sufficient **Scope**, which ensures that the extent to which a topic is explored covers the case under consideration.
3. The **Composition and Organization** of the source describes the extent to which the information is presented in a coherent, logically sequential manner.

²⁵ Gorski. 2007.

V. TEMPLATES

A Key Tips to Writing a Knowledge Base Article

The key idea behind a Knowledge Base (KB) article is that, sometimes, the best service the GHD can provide to its customers is simply to **get out of their way**. This means conducting a large amount of its support activities online, and thus providing an effective knowledge base that provides solutions without the need for customers to contact the GHD directly.

There are key elements for KB content that maximizes utility for customers:

1. “Flag” Common Questions that Need Articles, to determine exactly what questions are most common. One way is to use “cards” that list questions and track how many people asked them. large amount of cards can be set in “boards” that entire team can see in an open and organized way, and thus determine potential knowledge base articles.
2. Clarity in Writing is essential, using writing style that speaks clearly to the customer, even using colloquial terms.
 - a. Use Simple Titles
 - b. Assume that customers are beginners who will be bogged down by advanced terminologies.
 - c. Do not mention “in passing” things they need to do, but provide step-by-step instructions.
3. Content should be easy to Browse online.
 - a. Organize Articles Logically, beginning with recurring problems or issues. You can either use (1) chronological order, or (2) order by difficulty.
 - b. However, be mindful of workflow, by structuring KB articles in a way that keeps readers “on the page”. Do not “send them” doing/reading things that will distract them from their current workflow. Keep details and additions till the end.
4. Avoid a “wall of text”, but provide as much “bulleted” information as possible, with the use of figures and illustrations whenever possible.
 - a. Be straightforward,
 - b. Avoid marketing language,
 - c. Use little humour.

B Identifying Stakeholders

To determine if an individual can be included as a **stakeholder**:

- Will they be affected by the GHD, directly or indirectly?
- Can they influence the GHD's operation?
 - Do they have an impact on resources (material, personnel, funding)?
 - Do they have any specially needed skills or capabilities?
- Are they a position to resist any change brought about by the GHD? Or do they potentially benefit?

Once Stakeholders are identified, the **key stakeholders** are the ones with the most influence or who will be the most impacted. These key stakeholders will require the most communication and management, and a clear protocol needs to be established with them to define their level of participation, the frequency and type of communication, and to outline, early on, any concerns or conflicting interests.

A power-interest chart can then be developed to show the relative position of the stakeholders. It will rank power and interest from 1 (least) to 5 (most).

The ones with the least power and interest will reside in the lower left quadrant of the matrix and will therefore require minimal management effort, while the ones in the upper right quadrant will require the most management effort.

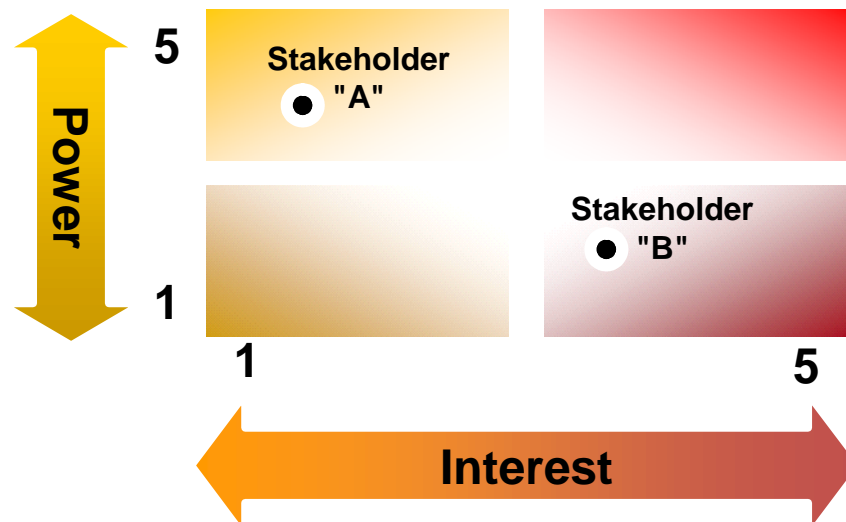


Figure 4. Power-interest chart

VI. APPENDIX

A Classification of Industry Sectors

It is helpful to use standard categories, as this would facilitate communication with other organisations, when the time comes. The list below is based on Global Industry Classification Standards.

Table 4. TAXONOMY OF INDUSTRY SECTORS: GLOBAL INDUSTRY CLASSIFICATION STANDARDS²⁶

Code	Sector	Subcode	Industry Groups
10	Energy	1010	Energy
15	Materials	1510	Materials
20	Industrials	2010	Capital Goods
		2020	Commercial & Professional Services
		2030	Transportation
25	Consumer Discretionary	2510	Automobiles & Components
		2520	Consumer Durables & Apparel
		2530	Hotels Restaurants & Leisure
		2540	Media
		2550	Retailing
30	Consumer Staples	3010	Food & Drug Retailing
		3020	Food, Beverage & Tobacco
		3030	Household & Personal Products
35	Health Care	3510	Health Care Equipment & Services
		3520	Pharmaceuticals & Biotechnology
40	Financials	4010	Banks
		4020	Diversified Financials
		4030	Insurance
		4040	Real Estate
45	Information Technology	4510	Software & Services
		4520	Technology Hardware & Equipment
		4530	Semiconductors & Semiconductor Equipment
50	Telecommunication Services	5010	Telecommunication Services
55	Utilities	5510	Utilities

²⁶ O'Hare et al., 2014, p.14.

B Sources of Data

There is a variety of sources of data available, both qualitative and quantitative data²⁷.

1. Qualitative data is obtained from such sources as:
 - a. Professional networking websites. Those are websites with discussion forums such as LinkedIn that can provide “industry buzz”, because they often serve as platforms for industry professionals to discuss their concerns.
 - b. Conferences and seminars, particularly the case of “trade events” where the types of challenges and opportunities are often discussed. However, it is important to research the event beforehand, to ensure that it is organized by a reputable organization, and attended by enough businesses targeted by the GHD,
 - c. Informal events that promote networking activities related to the Green Economy, such as the “Green Drinks” initiative;
<http://www.greendrinks.org/>
 - d. Technology blogs and open innovation platforms where businesses discuss their technical problems, the solutions they have developed, or novel Eco-Innovative technologies such as Yet2;
<http://www.yet2.com/>
 - e. Technical patents from online searchable patent databases such as Espacenet;
<http://www.epo.org/searching/free/espacenet.html>
 - f. Formal bodies such as National government departments for trade and industry, Trade associations, SME associations, and Chambers of commerce,
2. Quantitative data is obtained from such sources as:
 - a. International Trade Centre (ITC);
<http://www.intracen.org/>
 - b. The Centre for the Promotion of Imports from developing countries (CBI) has data on EU markets and trading with partners within the EU: ;
http://www.cbi.eu/marketintel_platform
 - c. The Food and Agriculture Organization (FAO) of the United Nations has data on global food prices and sustainability challenges being faced by the agricultural sector. ;
<http://www.fao.org/>

²⁷ O’Hare et al., 2014, p.17.

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