



UNITED NATIONS
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Global consultations on circular economy 2022-2023

Written statements of the regional preparatory meeting
for the African Group





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Ministry of Trade & Industry
Detailed Concept Paper
On



**To establish a platform for Industrial Waste Exchange
(IWEX), and**
**To support small & medium industries and entrepreneurship
in Egypt**

October 2022



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I. Background

Egypt National Cleaner Production Center (ENCPC); one of the Technology and Industrial Innovation Centers (TIC); Under the Ministry of Trade and Industry, is responsible for the Industrial Waste Management Project and the Business Encouragement Initiative. Both the project and the initiative aim at improving the efficiency of the industrial waste management in Egypt.

Due to the vital role of companies and individuals working in the collection, transportation and recycling of industrial waste is essential, The ENCPC, with the support of the African Development Bank and funding from the Transformation Support Fund, established the first industrial waste exchange system program in Egypt. Within the same context, the ENCPC has invested in equipment needed to establish an advanced unit for the recovery & recycling of agro-industrial waste as well as the production and promotion of bio-chemical industrial input. The center is envisioned to contribute to the increase of the circularity of the Egyptian economy, improve waste management systems and act as a catalyst for the promotion of green industry and circular economy. Therefore, the ENCPC is moving towards launching and establishing a platform for Industrial Waste Exchange and supporting small & medium Industries and entrepreneurship in Egypt.

The operation of the system is envisioned to be handled through a consortium of international organizations, national organizations, non-profit and private sector organizations in addition to, it will be supported by a financially sustainable manner under the supervision of the ENCPC/Program Management Unit (PMU). Furthermore, the consortium should add value through its experience and network to achieve the Ministry of Trade and Industry's ultimate objective, which is to promote business activities in all industrial sectors inputs production, bio economy, circular economy, and agro-industrial waste recycling.

In 2020, a report for the International Union for Conservation of Nature (IUCN)¹ declared that over 200,000 tons of plastic leaking into the Mediterranean each year. This is equivalent to over 500 shipping containers each day and added that this will at least double by 2040. More statistics and data are known on the huge amount of waste that is left over and miss-used and thrown by many factories in different sectors. In January 2022, The Egyptian Ministry of Local Development stated² that 47 million tons of different types of waste were collected in 2021. This can be taken as a sad news or a good potential to transfer and use this waste to an input to another industry managing waste effectively and reaching a win-win situation for factories and the country. Currently Egypt has 28 recycling factories aiming to reach 56 as noted by the Minister of Environment Yasmin Fouad.

¹ <https://www.iucn.org/news/marine-and-polar/202010/over-200000-tonnes-plastic-leaking-mediterranean-each-year-iucn-report>

² <https://www.egypttoday.com/Article/1/111595/Egyptian-minister-indicates-how-many-million-tons-of-waste-collected>



II. Scope of work

The Egypt National Cleaner Production Center (ENPCPC) with the support of the African Development Bank, under the auspices of the Ministry of Trade and Industry established IWEX website as Egypt's industrial waste exchange program. The website is shifting to a complete waste management portal and exchange between factories. It will include research institutes, entrepreneurs, and manufacturers to transfer waste output of an industry to be the input of another for a win-win situation for factories, government, and countries. This comes parallel with UN COP 27 objectives for waste management and going green, with the huge capacities of the factories in different sectors.

Joining forces for COP 27, the Ministry of Trade and Industry waste services will be provided through the portal as well. The solution will abide Industry, the ENPCPC, funding donors, research centers, and the developing software company is a consortium to implement IWEX

The IWEX platform and mobile application will initiate lots of benefits and goals; collection of platform and mobile application. The solution will elevate the experience of waste exchange providing solutions and facilities to factories such as buy or bid on the waste material. Waste lab tests, waste transportation and other by the law for the Protection of Personal Data, similar to the GDPR. A Program Management Unit will be established to effectively manage and supervise the platform operations and mobile application. great amount important data that will show as informative information for decision making such as factories location, their waste output, how frequent of every material, how best to allocate resources and materials output. It will be a mine of new creative ideas for the government from credible research centers to collaborate. Correct methods of waste management through digital solutions that will encourage investors and increase their trust in the country's investment opportunities especially at UN COP 27.

The project will provide benefits such as increase investment opportunities and open doors for new jobs creation and new industries and create effective communication channels between investors and researchers' regional and all around the world. It will decrease the expenses of importing materials, decrease pollution on the long run, achieving UN Strategic Development Goals. Enforcing correct behaviors of waste management, recycling, and efficient material usage. Direct return on investment from the platform is expected to be within 3 years of its launch. With an initial of 300 companies registering and joining IWEX platform, 120 entrepreneurs and investors, 100 researchers, 15 companies to provide services through it, and around 11 technological and industrial creative centers joining. We invite you to see the first website for the project: <https://www.iwexegypt.com/>.

The Ministry of Trade and Industry is creating a consortium to partner on developing and operating the platform for industrial waste exchange (IWEX) and to support small & medium industries and entrepreneurship in Egypt. The consortium will include the Ministry of Trade and Industry, other related ministries, international and aid organizations as funding donors, private sector companies, research centers, universities, academic institutions and the developer software company, which is the company that will be responsible for the design and development of the Platform digital solution, being the one that developed the first IWEX platform and aware of its cycle and workflow.

The scope of the detailed concept paper is to explain the project start, continuation and sustainability plan with the development and creation of IWEX platform with its value additions to all concerned parties that wish to come and be a part of IWEX regional and international. In addition we would say simply there is no waste, there are by products. We will work with the by-products until it become the products.

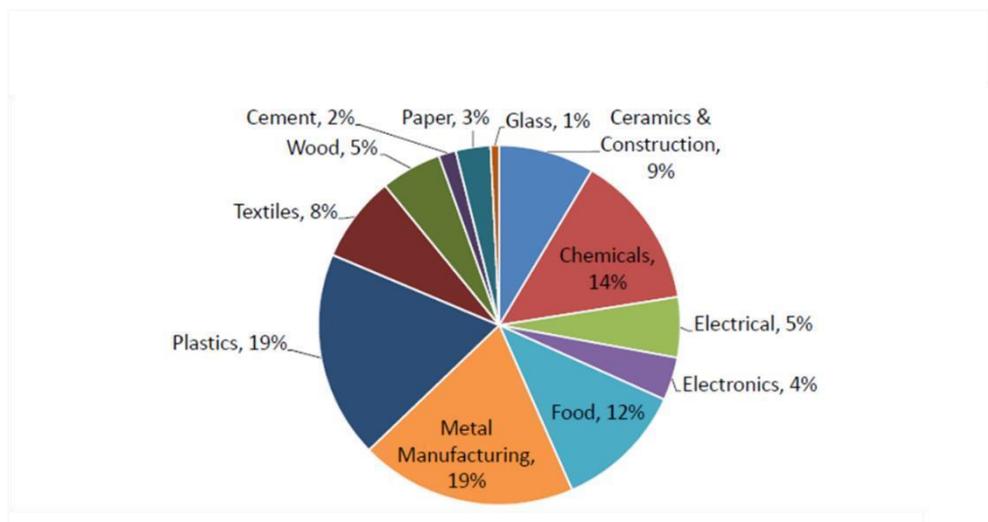
The paper includes a brief timeline of the start and coming phases of the project for the interested to participate.

III. The story

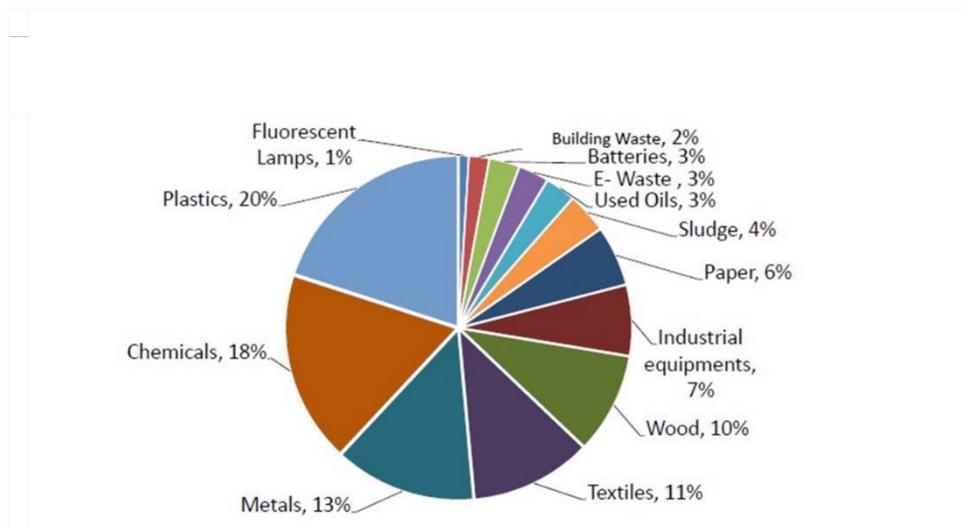
1. First IWEX website

Starting in 2017, the idea of a waste exchange management platform was created, and the platform successfully came to life. In the beginning the request was for the developer company to create a simple platform where factories can register, see what the others have to offer or require through listing page.

The portal allows factories to contact others for exchange of waste material of one factory to the benefit usage of the other factory. Egypt is rich with a wide array of different industrial sectors as the below figure shows:



With the different industrial sectors, we are faced with huge amounts of waste as the below diagram shows, which need proper management and with the success of the initial portal, we need to capitalize on it.



Moving ahead to 2020, the platform was a success and hundreds of factories registered at it and exchanging waste. Several criteria and events occurred that lead to the stop of further developments of the platform operations. Mainly that there was not a funding plan designed for its sustainability and to build upon what was developed despite the need for it and its importance. In addition, due to the low budget of the website, it was built with primitive tools that hinder its scalability, so the developer company will need to work changing the programming language. Moreover, few laws like law # 151 for year 2020 - which is very similar to the General Data Protection Regulations (GDPR) in the European Union (EU) - was issued in Egypt and so we must change the way the data is gathered and get the consents from the factories and change the hosting destination and multiple other things.

2. Need for IWEX platform

With the success of the platform, technological advancements and more demand for this service, a need for a complete e-eco system for waste management arises. This is strengthened by:

1. Bidding system requested (marketplace creation)

A required bidding system to elevate the experience of waste exchange and provide different solutions and facilities for the factories. The platform will offer the two options either the waste can be bought now if wanted or the buyer can wait for a bid to occur and join the different factories with different prices till the bid is closed and a winner is known.

2. Added value modules

The first platform was not built with sustainability matters put into consideration and thus it was developed as a simple website. Now, we face new requirements, advanced features, and different target audience.



IWEX platform will offer assistive services to the buyer and seller such as inspection on the waste material by the ministry for conformity. Also, it will provide a list of services (labs, transportation, technical advices...) that is known to serve in making_high_accurate description and upgrading level of the materials shown in the platform.

3. Law 151/2020

Egypt provided law 151 for the year 2020 on the Protection of Personal Data. An abstract from the law governs “the rights of persons with respect to their data as well as the obligations of those who control data.” Thus, registered factories on the platform need to have their information secured and protected with their consent to display the needed information at the platform. The new platform needs to accommodate these latest changes and applied laws. In addition to hosting the website in Egypt.

4. Budget limitations

There was not budget allocated for the previous platform after its launch. No financial plans were dedicated for its growth for year 1, year 2, etc. adding features and expansion plans.

5. Attaching the website to the .gov.eg official link

The website is under the supervision of the Ministry of Trade and Industry, and this gives us the privilege of using the (platformname.gov.eg) official linkage to the Egyptian Ministry. This will add weight to the platform.

IV. Benefits to realize

1. Mobile application solutions

There are two important application that need to be added here, one is an extension to the portal that we target to develop with the developer company assistance, assisting factories to communicate together effectively. Factories will be easily able to register from the mobile with the GPS feature, it will be easier to locate their factory location. Factories can see the distance between each other's. They will be notified directly over the mobile once a factory publishes one of their waste needs.

In a great value-added addition to the main platform idea, we will develop a second mobile application that connects factories users with governorates with Non-Governmental Organizations (NGOs). The idea is that due to the high pollution rate in the Mediterranean for example, this affects the European seashores. Accordingly, when we all cooperate for waste management and reduction, it will affect us all positively. The mobile application can be based on the idea of detecting pollution. Whenever a user sees a factory emission or throw of waste, he can report that through the application. The target will be after that for the governorate to communicate with this factory and see best viable solutions to get rid of the pollution. IWEX portal project will be one of them. Instead of getting rid of the factory output in a wrong way that damages and pollutes its surrounding, it will



be able to exchange that waste with another factory that can use it as input for its manufacturing for example or as agriculture compost, etc.

2. Data and reports value creation

The platform will be a mine of data for all parties. Through collecting factories data for registration, reports, and waste exchanged – all interested parties will gain knowledge and valuable data. Governorates, NGOs, and aiding organizations will be able to identify the most waste material exchangeable, which factories sectors exchange the most and the least, their location, what items are not exchanged much on the platform and what items are, etc. There is also the idea of developing and presenting a map of Egypt governorates with the most polluted areas for example and the least. This will show us how these places affect the surrounding locations be it in Egypt or other countries. Valuable and important statistics will be available through the platform for all industries, sectors, and beneficiaries.

3. Waste management right handling

The main objective of the platform is waste exchange management, and this is what will be achieved through the interaction between factories, investors, and centers. This will be the main catalyst for the **circular economy**³. It will act like a market for effective waste exchange where both factories will gain; the one who is giving his waste and the other who is receiving it to start a new process cycle at his factory. The Ministry can promote certificates and honors for factories who assist in this and adds value to the society and country by well implementing the concept of beneficial waste exchange.

4. COP 27 and increase in revenues with foreign currency

The platform will enable internal and external donors to see how best Egypt is managing the waste exchange policies and regulations and transferring that to a powerful digital solution platform. This will increase their trust in the investment opportunities in the country as well as encourage them to come and invest in Egypt, matching with their country's plans. This comes very much in favor with the launch of COP 27 'uniting the world to tackle climate change'⁴.

5. Job opportunities and new markets

The platform with its potential areas for growth, connecting factories together and connecting investors with startups and researchers – opens business opportunities, and many potential job opportunities in many directions. Factories will need skilled workers for the waste management, labors, and team to work with. New businesses created, and current ones can expand and all that opens the need for new workers.

³ Circular economy is a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing, and recycling existing materials and products as long as possible ⁴ <https://www.cop27egy.com/>

6. Assist you in implementing the same platform success in your own country

IWEX platform will be a role model for successful waste exchange market platforms. For donors outside Egypt, we can take this platform to be a model work to be transferred and adapted to your country's factories and waste exchange management ground. Thus, the idea of IWEX platform after being implemented in Egypt, we can transfer the success methodology through the developer company to apply it and have it implemented at the donor's country, using its success approach plan.

Through this concept note, you are invited to be our successful partner in creation and development of the IWEX platform for waste management.

7. Regional and Global Outreach

Will be a stage for trading and value added manufacturing of industrial waste into new products through regional and global partnerships. The IWEX will become the main hub for collecting and connecting new kind of business. As a result from the pilot model, the Indian government studied our model to see aspects of its success and usefulness with its added value to the factories and rich data.

V. Initial project timeline

Date	Event
2018	Start of the initial IWEX website.
2020	Portal success stories of exchange waste management from factories.
2022	New portal under the supervision of the Ministry of Trade and Industry , with enhanced new features and requirements and more demand than ever.
Q4, 2022 and Q1, 2023	Start of the marketing plan and announcing portal launch with its added value and importance.
Q2, 2023	Launch of the new portal with an elegant UI/UX design, allowing factories to register and join.
Q3, 2023	Full developed PMU unit for the operation and supervision of the portal.

Q4, 2023	Publishing of the portal part 2 with a set of developed features ready for factories' bidding and use of the system.
Q3 and Q4, 2023	Fully developed e eco-system IWEX platform with all features included + mobile application.
2025	Return on Investment is realized , and the project is bringing in profits.

VI. Financial figures covering year 1

1. Activity 1: Establish and Launch a platform for Industrial Waste Exchange

1. Setup environment

This covers many phases such as creation of the project branding identity and working on the setup environment and infrastructure by the developer company.

2. User-friendly interface

Moving on to the conception of user-friendly interface with a planned user experience as the user journey through the platform.

3. Platform development

Parallel to this, the developer company will start the development of the platform features with its targeted users' roles as factory owner, researcher, entity, etc.

4. Creation of a loyalty (Point) system module with its criteria still to know.

A loyalty system with gained points will be formulated to work according to the criteria that will be announced by PMU and the Ministry. Features will be applied on phases.

5. Ministry's ownership

Ownership of the project and its source code is dedicated from the Ministry of Trade and Industry – Egypt National Cleaner Production Center (ENCPC); with the full project documentation submitted and manual guidelines.

6. Mobile application design and development, and creation of the store accounts

A further design and development phase of the platform will be for its mobile application with the creation of the platform associate account on Google Play and App store, each with its fees respectively annually for App store and once for Google Play.

7. Software license fees and Hosting specifications

This must be very well covered and robust to maintain the consumption, weight and transactions and all portal function-ability. Covered in this activity's fees are the hosting configuration, security measures taken for Law 151 to Egypt for Data Protection law that governs protecting users' data on the system, and the General Data Protection Regulations (GDPR) as well. Security measures are covered in adding security certificates such as SSL. Acquiring servers with sufficient storage and capabilities as needed to hold and maintain the huge amount of data that will be uploaded on the platform and workflow. This item includes all software licenses that will be needed to function the portal well such as:

- SSL certificates and domain name
- Hosting and management of the Servers + Ddos + Sentry payment
- Email hosting over Microsoft office 365
- Virtual machines
 - CPU: 2 cores, RAM: 8GB, Storage: 150 GB SSD
 - CPU: 2 cores, RAM: 8GB, Storage: 300 GB SSD
 - CPU: 2 Cores, 32GB Memory, 500GB SSD Storage
- Connectivity - Internet bandwidth
- Kaspersky Endpoint Security Cloud (15 licenses)
- SharePoint server license
- Power BI Server license
- Microsoft license (Windows Server 2022 Standard - 2 Core License Pack) • SQL Server 2019 Standard - per core

8. Mine for research institutes and waste management sustainable problem solving

The platform will include a library including documents abstracts uploaded by researchers who are willing and have creative ideas for waste management. This can be used by research institutes and NGOs to better reach sustainable ideas for waste management in different sectors and countries. This will help solve lots of problems and be a credible source for connecting researchers with institutes and organizations who are looking for a solution to their waste management.

9. Connecting NGOs with governments

As mentioned earlier in the document that we can develop a mobile solution for pollution detecting. It will assist concerned organizations, aids, and NGOs to know and follow up on factories that are causing pollution, and where is its effect. Moreover, it will assist to identify methods to shift the waste discharge to waste management control. Instead of applying wrong methods, it will be an input to another industry and assist in the cycle of waste management for the betterment of all parties, governorates, and countries.

10. Training sessions

Training sessions will be given to the PMU team members to know how best to manage the platform features and team they supervise. Assistive videos will be provided to show on the platform to guide the users (factories, researchers, buyers, viewers) on how to topics such as how to register, how to bid, how to ask for different kinds of help (inspection, transportation, information, etc.) and others.

11. Team members joining (Human Resources)

Based on its good calibers and experience, the developer company will dedicate a team of well experienced, capable, and knowledgeable team members for the platform creation. This will include platform and mobile application iOS and Android development team, quality control and maintenance engineers, business analyst, project coordination, user interface/ user experience designer (UI/ UX), and IT specialist. The team will have technical and business consultants, business development, and management team. The developer company team works through agile development and testing methodology. This ensures the development team, coordination team and the Ministry are all on the same line of project features delivery, requirements, and timeline.

12. Lead consultant

In addition to the above-mentioned team members, a highly specialized digital transformation consultant will be assigned to oversee the flow of the project business analysis and development. The Leader must possess more than 20 years of experience with excellent achievements previously recognized in digital and business transformation projects. The Leader must have had previous sound experience in working with governmental agencies and digital units' creation and processes. Ability to efficiently manage the project and its team members with very good communication and interpersonal skills. Problem solver and has wide experience technically as well with proven successful record. Experienced in different projects in different countries will be a plus since he will communicate with the project stakeholders. Very much aware of Egypt business environment, opportunities to tackle and uniting with the country's vision.

The consultant needs to have worked previously as a consultant in other projects with the ministry and accomplished success. In his very important role, the lead consultant should have previously managed and directed digital transformation national projects in Egypt. Also, to have well dealt with staff and employees assisting them with his knowledge and experience on best ways to use the new solutions and tools they have. Knowledgeable of project management standards and guidelines. Lead the change management process and enabled staff to apply the new systems, tools, procedures, and communication channels.

Activity 1 fees cover IWEX digital platform solution business specifications, design, creation and development, testing, hosting, and publishing the platform. This includes

all platform creation steps starting with the software requirements specifications document (SRS), and UI/UX design options. It covers development of the platform features, quality engineering team testing, creation of responsive mobile application and all to be well covered and maintained security wise against attacks, firewall, etc.

2. Activity 2: Promote and technical support to operate the online platform and control the synergies between all the stakeholders

Activity 2 fees will cover the following for year 1 of the project.

1. *Creation of a PMU unit*

It will oversee, supervise, and manage the platform operations. This includes creation of the PMU unit physical location, equipment, maintenance, and supervision of the platform. It ensures follow up on the transactions occurring, research papers, bidder performance, and communication with different stakeholders concerned with the platform, etc.

2. *Qualified team members*

For the significant importance and responsible role of the PMU, it must include highly qualified and well experienced staff members. Each will be equipped with his computer set, connectivity and assistive tools and programs to perform his job. Team members will be of valuable experience in similar projects, management, and consultation skills, knowledgeable of waste management and value creation. They must possess effective communication and presentation skills as they will be in continuous contact with the platform stakeholders. This includes governorates representatives, ministers, donors, agency aids, research units, universities, banks, and foreign countries' representatives. The lead consultant of the project will be working in collaboration and supervision of the PMU unit for his expertise, knowledge and added value input for the project success.

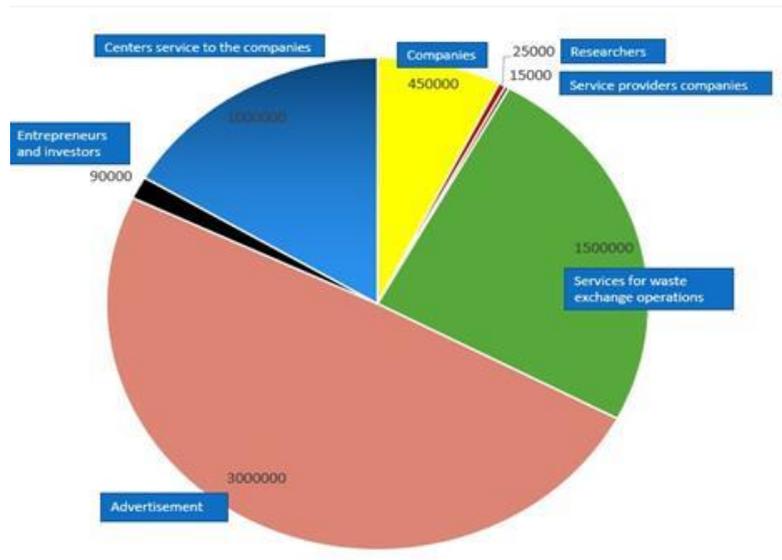
3. *Role of the PMU*

The PMU will be the cornerstone of the platform management, supervision, and support for keeping it well functional, coordinating between all platform stakeholders. **It** will ensure how the factories operate at it for the bidding and exchange of waste material. Identify if further development features are needed from the software development company, and how the project expenses and revenues are operating. Responsible for sustaining fees flow needed for the project from the donor parties, and the work of the Ministry to be complete at it. This will be ensured for the creation and development year of the platform, year 2, year 3 and so forth.

VII. Return on Investment (RoI)

1. Direct Return on Investment

Direct return on investment from the platform is expected to be within 3 years of its launch. With an initial of 300 companies registering and joining IWEX platform, in addition to the amount of investments in it, we estimate the time for return on investment from the project platform to be within 3 years.



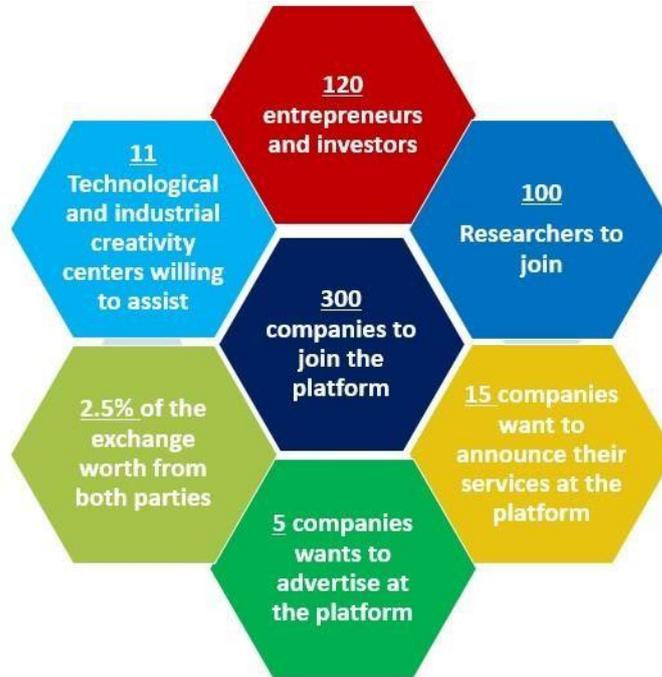
2. Indirect Return on Investment

Many attributes will be seen on the country in many ways by implementing IWEX project, such as:

- A major decrease is detected at the government and the Ministry of Environment budget for spending such big amounts on removing and managing waste.
- Reduce in the materials we import to develop and create new industries since we can get them from internal factories' output.
- Increase in the revenues of the technological and industrial creativity centers.
- Increase in the investment opportunities in the country which opens doors for new job opportunities, new industries and blooming of the country's economy on the long run.
- Effective communication channels between investors and researchers to adopt and use new ideas that can be a powerful engine to solve waste problems and create new solutions, new business opportunities and even export doors.

3. Within 2 years, estimated number of users

Estimated numbers for platform users within 2 years of its launch



VIII. Next step

Eagerly we want to have a base platform developed and implemented ready before COP 27. This major important global event that will be hosted in Egypt, Sharm ElSheikh November 2022 needs to be the launch ground for the platform. We aim at having a functional initial platform with factories able to register at it during COP 27 event.

We are facing tight deadline, but with your support and partnership for investing in the platform with your appreciative funding we can do it together.

We anticipate hearing back from your organization with your feedback to be an integral funding body for the start and sustainability of the platform with the Ministry.

The Ministry of Trade and Industry – Egypt National Cleaner Production Center (ENCPC) is looking forward to hearing from you and work together on how your organization can assist in the creation of the platform and providing sustainability to its operations.





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