



Maghreb Technical Note / Number 11

Plastic-free Coastline



Towards a Circular Economy in Tunisia

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Acronyms and Abbreviations



ANGed	<i>Agence Nationale de Gestion des Déchets</i> (National Waste Management Agency)
COPIL	<i>Comité de Pilotage</i> (Steering Committee)
EPR	Extended producer responsibility
EPT	Environmental Protection Tax
GDP	Gross domestic product
IMAP	Integrated Monitoring and Assessment Program
LISP	<i>Littoral Sans Plastique</i> (Plastic-Free Coastline)
LISP COPIL	Steering Committee of the LISP Strategy
TPE	Environmental Protection Tax (<i>taxe pour la protection de l'environnement</i>)



Beach in Tunisia
Source: PhotoRK, shutterstock.com

Acknowledgements



This background technical note summarizes the development of the partnership between Tunisia and the World Bank to address plastic pollution. It builds on the diagnostics on the status of plastic pollution, the main findings of which are summarized in the preceding technical report, "Plastic-Free Coastlines: A Contribution from the Maghreb to Address Marine Plastic Pollution".¹ This note illustrates the progress of the partnership towards implementing the *Littoral Sans Plastique* (LISP) Strategy, with a focus on the following five deliverables: (i) Carry out an institutional analysis on plastic waste management; (ii) Design pilot activities to support the reduction of single-use plastics in tourism establishments in Djerba; (iii) Conduct a beach litter survey in selected plastic pollution hotspots; (iv) Develop an integrated marine litter database; and (v) Prepare a LISP communication plan.

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¹ World Bank 2022a.

Executive Summary



Tunisia could revive its economy by unlocking the full potential of its blue economy. The country's 1,670-kilometer Mediterranean coastline is home to two-thirds of Tunisia's population, or 7.6 million people, making Tunisia well placed to benefit from its marine and coastal resources. The blue economy already contributes nearly 14 percent of the country's gross domestic product (GDP). Coastal tourism and fisheries alone provide 450,000 jobs. Emerging blue sectors such as offshore energy, mariculture, and marine biotechnology also hold great potential for job creation. Tunisia could invest in its blue economy to foster a more resilient and sustainable economic future.



Plastic pollution is a key threat to Tunisia's blue economy. The health of the Mediterranean Sea, which underpins the productivity of the country's blue economy, is in a dire state. Coastal tourism, which is driving Tunisia's economic recovery, is the most affected sector. If left unchecked, plastic pollution could triple by 2040. Plastic pollution priority hotspots in Tunisia are concentrated in areas with intense economic activity such as Mahdia, Monastir, Sfax, and Médenine.



Tunisia and the World Bank have established a solid partnership to address plastic pollution and to develop the blue economy. Under this partnership, the government has conducted its first assessment of the status of marine plastic pollution. Based on the assessment, and in consultation with stakeholders, the government is starting to operationalize a *Littoral Sans Plastique* (LISP, or Plastic-Free Coastline) Strategy based on circular economy principles. The LISP Strategy is being co-designed with the participation of stakeholders throughout the plastic value chain, including civil society and the private sector.



The LISP Strategy aims to create "a plastic-free Tunisian coastline by adopting a circular, inclusive, and sustainable model" that will stimulate innovation and job creation. Accompanied by an operational Action Plan with priority measures and projects, the LISP Strategy will contribute to Tunisia's National Strategy for Ecological Transition by promoting a circular plastic economy. The transition to a circular economy will also reduce greenhouse gas emissions. The LISP Strategy will further support the implementation of the Blue Economy Roadmap presented in the report, "Beyond the Shoreline: Towards a Blue and Resilient Future for Tunisia,"² especially Pillar III (Foster investment), which relates to environmental protection and climate resilience. The intersectoral *Comité de Pilotage* (COPIL, or Steering Committee) for the LISP Strategy (LISP COPIL) has been overseeing the development of the strategy and will monitor its implementation.



In partnership with the World Bank, the government has already started implementing priority actions aligned with the LISP Strategy. This background technical note presents the progress of this partnership between 2022 and 2023, focusing on five key deliverables and their main results (Table 1). It builds on the preceding technical report, "Plastic-Free Coastlines: A Contribution from the Maghreb to Address Marine Plastic Pollution,"³ which presented the diagnostic and the initial strategic planning phase.

² World Bank 2024a.

³ World Bank 2022a.

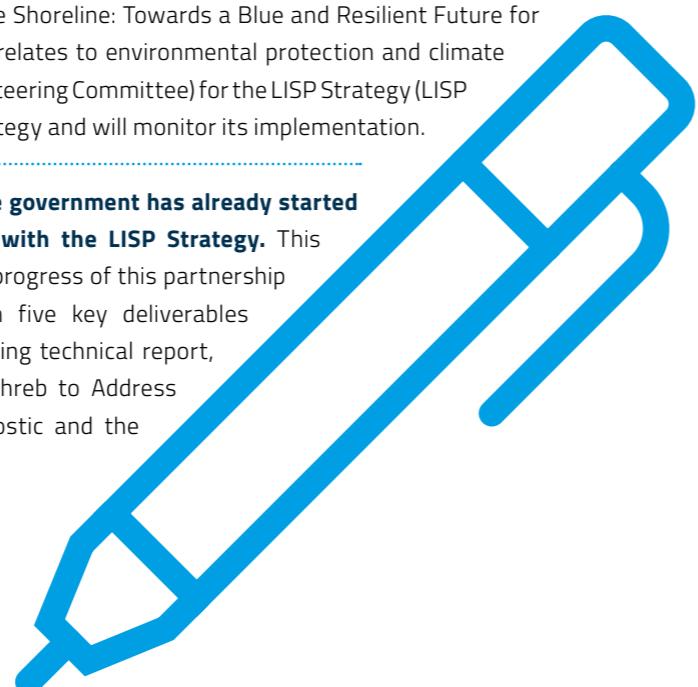


Table 1: Main deliverables and results

Deliverables	Main results
Deliverable 1: Carry out an institutional analysis on plastic waste management	The main institutional, economic, and financial constraints were identified. Short-term and long-term recommendations were provided to make a paradigm shift towards a stronger partnership between public and private sectors, with stronger participation by local authorities.
Deliverable 2: Design pilot activities to support the reduction of single-use plastics in tourism establishments in Djerba	The following five pilot activities were put forward for Djerba based on a rapid survey on plastic use in tourism establishments and stakeholder consultations: (i) Enhance communication in hotels; (ii) Develop synergistic partnerships between hotels and NGOs; (iii) Revitalize the craft sector; (iv) Research alternatives to plastic products; and (v) Develop a commitment charter and eco-label for sustainability.
Deliverable 3: Conduct a beach litter survey in selected plastic pollution hotspots	A beach survey in plastic pollution priority hotspots showed that plastic is the most common type of beach litter, representing 77 percent of the 9,821 items collected. In partnership with local non-governmental organizations (NGOs), 66 people were trained in beach surveys using the Integrated Monitoring and Assessment Program (IMAP) methodology.
Deliverable 4: Develop an integrated marine litter database	An integrated database model was designed based on the Ministry of Environment's Open Data system. ⁴ The design includes: (i) Developing a new application module to receive and manage plastic pollution data; (ii) Further developing the existing Open Data system; and (iii) Developing an Excel data loading tool.
Deliverable 5: Prepare a LISP communication plan	The following communication outputs were produced to support the ministry in launching a communication campaign. <ul style="list-style-type: none"> ▪ A communication framework with key messages, target audiences, and communication channels ▪ A communication plan to implement the campaign with three budget scenarios (low, medium, and high) ▪ Communication assets, including a campaign logo, a brochure, and posters.

⁴ See <https://www.opendata-environnement.tn>

Immediate next steps

The following immediate follow-up actions, which stem from the deliverables above and are discussed in Section 2, would support Tunisia's transition to a plastic-free coastline:

- Operationalize the LISP Strategy**, starting with priority projects, and regularly monitor progress on implementation through the intersectoral LISP COPIL.
- Strengthen financial mechanisms** for plastic waste management by reviewing the ecotax⁵ to finance waste management operations in line with an extended producer responsibility (EPR) model.
- Optimize the ECO-LEF system⁶** by indexing prices to that of virgin resins and ensuring the traceability of flows.
- Strengthen institutional mechanisms** for plastic waste management and develop a priority partnership program with coastal municipalities.
- Invest in plastic waste management** and foster stronger public-private partnerships.
- Develop a social plan for informal waste workers** and pilot a formalization process to assess the plan's feasibility.
- Reduce the production and use of single-use plastics**, especially the main litter types identified in the beach survey.
- Strengthen the monitoring and data management of plastic pollution** by establishing a national baseline. The baseline will help monitor the progress and impact of the LISP Strategy. It will also support implementing the upcoming international legally binding instrument on plastic pollution.
- Enhance the existing Open Data system** based on the database design proposed in this report. The roles of each organization involved in monitoring data flow need to be clearly defined. This will help Tunisia prepare for national reporting to the legally binding instrument on plastic pollution in future.
- Enhance scientific knowledge on plastic pollution** by conducting additional field surveys to cover other beaches, especially to better understand the sources and status of microplastic pollution.
- Launch a communication campaign** to encourage stakeholder participation in implementing the LISP Strategy.

⁵ Ecotax is a tax applied to certain imported products. It is applied at 7 percent ad valorem.

⁶ ECO-LEF is the public system for the recovery and recycling of packaging waste. See Box 5 on page 32.

Conclusion



Tunisia would benefit from continuing its lifecycle approach to stop plastic pollution. The government has already restricted the production, import, distribution, and possession of single-use plastic bags, and civil society has participated in beach cleanups and awareness-raising activities. The government is also strengthening partnership with stakeholders along the plastic value chain. For example, in partnership with the World Bank, 66 people in local NGOs have been trained to carry out beach surveys using the Integrated Monitoring and Assessment Program (IMAP) methodology. The LISP Strategy will further facilitate and enhance active participation of all stakeholders so that actions are taken throughout the plastic lifecycle.



The government has an opportunity to develop a cross-sectoral program on plastic pollution, based on the LISP Strategy and Action Plan. The LISP COPIL could serve as the foundation for a long-term intersectoral coordination mechanism to address plastic pollution, taking a whole-of-government approach.



The LISP Strategy's cross-sectoral implementation modality, being led by the intersectoral LISP COPIL, could help Tunisia implement the upcoming international legally binding instrument on plastic pollution, including in the marine environment. The legally binding instrument will likely call for actions throughout the lifecycle of plastics, from production to final disposal. As such, the cross-sectoral LISP implementation modality would present a useful basis for coordinated national actions to implement the legally binding instrument.



Tunisia will continue addressing plastic pollution to unlock the full potential of its blue economy. With the World Bank's technical support, the government will continue to operationalize the LISP Strategy and its Action Plan as part of the implementation of the Blue Economy Roadmap. The World Bank will continue its technical assistance to support the government on its first progress review of the LISP Strategy. The partnership will continue addressing plastic pollution and promoting the ecological transition to a sustainable and inclusive economic model, driven by the blue economy.

Figure 1: Timeline of the partnership between the World Bank and Tunisia to address plastic pollution



Source: World Bank 2022.

Résumé exécutif



La Tunisie pourrait relancer son économie en exploitant tout le potentiel de son économie bleue. Les 1 670 kilomètres de côtes méditerranéennes que compte le pays abritent les deux tiers de la population tunisienne, c'est-à-dire 7,6 millions de personnes, ce qui fait de la Tunisie un pays bien placé pour tirer profit de ses ressources marines et côtières. En 2018, l'économie bleue a déjà contribué à près de 14 % du produit intérieur brut (PIB) du pays. Le tourisme côtier et la pêche représentent à eux seuls 450 000 emplois. Les secteurs émergents de l'économie bleue tels que l'énergie offshore, la mariculture et la biotechnologie marine recèlent aussi un grand potentiel de création d'emplois. La Tunisie pourrait investir dans son économie bleue pour favoriser un avenir économique plus résilient et durable.



La pollution par le plastique représente une menace majeure pour l'économie bleue de la Tunisie. La mer Méditerranée, qui sous-tend la productivité de l'économie bleue du pays, se trouve dans un état désastreux. Moteur de la reprise économique en Tunisie, le tourisme côtier est le secteur le plus touché par la pollution. Si rien n'est fait, la pollution par le plastique pourrait tripler d'ici à 2040. En Tunisie, les points les plus touchés par la pollution par le plastique se recensent essentiellement dans les zones telles que Mahdia, Monastir, Sfax et Médenine, où des activités économiques intenses sont menées.



La Tunisie et la Banque mondiale ont forgé un partenariat solide pour lutter contre la pollution par le plastique et booster l'économie bleue. Au titre de ce partenariat, le gouvernement a réalisé sa première évaluation de l'état de la pollution par le plastique marine. À la suite de cette évaluation et en concertation avec les parties prenantes, le gouvernement tunisien a déjà commencé à rendre opérationnelle une stratégie *Littoral sans plastique* (ou LISP) qui est adossée sur les principes de l'économie circulaire. La stratégie pour un littoral sans plastique est conçue en collaboration avec les parties prenantes d'un bout à l'autre de la chaîne de valeur du plastique, notamment la société civile et le secteur privé.



La stratégie LISP vise à créer « un littoral tunisien sans plastique adoptant des modèles circulaires inclusifs et durables », ce qui devrait doper l'innovation et la création d'emplois. Accompagnée d'un plan d'action opérationnel avec des mesures et des projets prioritaires, la stratégie LISP contribuera à la matérialisation de la Stratégie nationale de transition écologique de la Tunisie en préconisant une économie circulaire du plastique. La transition vers une économie circulaire permettra également de réduire les émissions de gaz à effet de serre. La stratégie LISP soutiendra la mise en œuvre de la feuille de route de l'économie bleue présentée dans le rapport intitulé « Beyond the Shoreline: Towards a Blue and Resilient Future for Tunisia » (« Au-delà du littoral : vers un avenir bleu et résilient pour la Tunisie »)², en particulier le pilier III (favoriser l'investissement) qui concerne la protection de l'environnement et la résilience climatique. Le Comité de pilotage (COPIL) intersectoriel de la stratégie Littoral sans plastique (COPIL-LISP) a supervisé le développement de la stratégie et fera le suivi de son application.



En partenariat avec la Banque mondiale, le gouvernement a déjà commencé à appliquer des mesures prioritaires alignées sur la stratégie LISP. Cette note technique de référence présente les progrès de ce partenariat entre 2022 et 2023, en mettant l'accent sur cinq principaux produits attendus et leurs principaux résultats (tableau 1). Elle s'appuie sur le rapport technique précédent, intitulé « Plastic-Free Coastlines: A Contribution from the Maghreb to Address Marine Plastic Pollution » (« Des côtes sans plastique : Une contribution du Maghreb à la lutte contre la pollution marine par le plastique »)³, qui présentait le diagnostic et la phase initiale de planification stratégique.

² Banque mondiale, 2024a.

³ Banque mondiale, 2022a.

Tableau 1. Principaux résultats des produits attendus

Produits livrables	Principaux résultats
Produit livrable no°1 Effectuer une analyse institutionnelle de la gestion des déchets plastiques	Les principales contraintes institutionnelles, économiques et financières ont été recensées. Des recommandations à court et à long termes ont été formulées afin d'opérer un changement de paradigme vers un partenariat plus solide entre le secteur public et le secteur privé, avec une plus grande participation des autorités locales.
Produit livrable no°2 Concevoir des activités pilotes afin de soutenir la réduction des plastiques à usage unique dans les établissements de tourisme de Djerba	Cinq activités pilotes ont été proposées pour Djerba à l'issue d'une enquête rapide sur l'utilisation du plastique dans les établissements de tourisme et des consultations avec des parties prenantes, à savoir : i) améliorer la communication dans les hôtels ; ii) mettre en place des partenariats synergiques entre les hôtels et les organisations non gouvernementales (ONG) ; iii) redynamiser le secteur de l'artisanat ; iv) rechercher des solutions de recharge aux produits en plastique ; et v) élaborer une charte d'engagement et un label écologique pour la durabilité.
Produit livrable no°3 Réaliser une enquête sur les déchets de plage dans certains points très fortement touchés par la pollution par le plastique	Une enquête sur la pollution par le plastique au niveau des plages menée dans les points les plus en proie à la pollution par le plastique a montré que le plastique est le type de déchets le plus courant sur les plages, car il représente 77 % des 9 821 articles collectés. En partenariat avec des ONG, 66 personnes ont été formées à la réalisation d'enquêtes sur la plage grâce à la méthodologie du Programme de surveillance et d'évaluation intégrées (IMAP).
Produit livrable no°4 Mettre au point une base de données intégrée sur les déchets marins	Un modèle de base de données intégrée calqué sur le modèle du système Open Data du ministère de l'Environnement a été conçu ⁴ . La conception comprend : i) la formulation d'un nouveau module d'application pour recevoir et gérer les données sur la pollution par le plastique ; ii) la poursuite du développement du système Open Data existant ; et iii) la mise au point d'un outil Excel de chargement de données.
Produit livrable no°5 Préparer un plan de communication sur la stratégie LISP	Les documents de communication suivants ont été produits pour aider le ministère à lancer une campagne de communication : <ul style="list-style-type: none"> ▪ Un cadre de communication avec des messages clés, des publics cibles et des canaux de communication ; ▪ Un plan de communication pour mener à bien la campagne avec trois scénarios budgétaires (faible, moyen et élevé) ; et ▪ Des outils de communication, notamment un logo de campagne, une brochure et des affiches.

⁴ Voir <https://www.opendata-environnement.tn>

Prochaines étapes immédiates

Les mesures de suivi immédiates ci-après, qui découlent des produits livrables ci-dessus et sont examinées dans la section 2, pourraient servir de lame de fond à la transition de la Tunisie vers un littoral sans plastique :

- Rendre opérationnelle la stratégie LISP, en commençant par les projets prioritaires, et suivre régulièrement les progrès accomplis dans la mise en œuvre par l'intermédiaire du Comité de pilotage intersectoriel de la stratégie LISP.
- Renforcer les mécanismes financiers pour la gestion des déchets plastiques en révisant la taxe écologique⁵ pour financer les opérations de gestion des déchets conformément à un modèle de responsabilité élargie des producteurs (REP).
- Optimiser le système ECO-LEF⁶ en indexant les prix sur ceux des résines vierges et en veillant à la traçabilité des flux.
- Renforcer les mécanismes institutionnels de gestion des déchets plastiques et élaborer un programme de partenariat prioritaire avec les municipalités des zones côtières.
- Investir dans la gestion des déchets plastiques et encourager la mise en place de partenariats public-privé plus solides.
- Élaborer un plan social pour les travailleurs du secteur informel des déchets et piloter un processus de formalisation pour évaluer la faisabilité du plan.
- Réduire la production et l'utilisation de plastiques à usage unique, en particulier les principaux types de déchets mentionnés dans l'enquête sur les plages.

⁵ La taxe écologique est une taxe qui s'applique à certains produits. Elle s'appliquait au taux de 7 % ad valorem.

⁶ ECO-LEF est le système public de valorisation et de recyclage des déchets d'emballages. Voir l'encadré 5.

Conclusion



La Tunisie gagnerait à poursuivre son approche fondée sur le cycle de vie pour mettre fin à la pollution par le plastique. Le gouvernement a déjà limité la production, l'importation, la distribution et la possession de sacs en plastique à usage unique, et la société civile a participé à des nettoyages de plages, ainsi qu'à des activités de sensibilisation. Le gouvernement renforce également le partenariat avec les parties prenantes tout au long de la chaîne de valeur du plastique. Par exemple, en partenariat avec la Banque mondiale, 66 personnes travaillant dans des ONG locales ont été formées à la réalisation d'enquêtes sur les plages fondées sur la méthodologie du Programme de surveillance et d'évaluation intégrées. La stratégie LISP facilitera et renforcera la participation active de l'ensemble des parties prenantes pour que des mesures soient prises tout au long du cycle de vie du plastique.



Le gouvernement pourrait désormais envisager d'établir un programme intersectoriel sur la pollution par le plastique, fondé sur la stratégie et sur le plan d'action de la stratégie LISP. Le Comité de pilotage de la stratégie LISP pourrait servir de base à un mécanisme de coordination intersectorielle à long terme pour lutter contre la pollution par le plastique, grâce à une approche pangouvernementale.



La modalité intersectorielle de mise en œuvre de la stratégie Littoral sans plastique dirigée par le Comité de pilotage intersectoriel de la stratégie LISP pourrait aider la Tunisie à appliquer le prochain instrument international juridiquement contraignant sur la pollution par le plastique, y compris dans l'environnement marin. L'instrument juridiquement contraignant nécessitera probablement des interventions tout au long du cycle de vie des matières plastiques, depuis leur production jusqu'à leur élimination finale. En tant que telle, la modalité de réalisation intersectorielle de la stratégie LISP devrait constituer une base utile pour des mesures nationales coordonnées visant l'instrument juridiquement contraignant.



La Tunisie continuera à s'attaquer à la pollution par le plastique afin de libérer le plein potentiel de son économie bleue. Avec l'appui technique de la Banque mondiale, le gouvernement tunisien continuera à rendre opérationnels la stratégie LISP et son plan d'action dans le cadre de la réalisation de la feuille de route pour l'économie bleue. La Banque mondiale poursuivra son assistance technique pour aider le gouvernement à réaliser le premier examen de l'avancement dans la mise en œuvre de la stratégie LISP. Le partenariat continuera à s'attaquer à la pollution par le plastique et à contribuer à la transition écologique vers un modèle économique durable et participatif tiré par l'économie bleue.

Figure 1. Chronologie du partenariat entre la Banque mondiale et la Tunisie dans la lutte contre la pollution par le plastique



ملخص تنفيذي

النتائج الرئيسية	الإنجازات المستهدفة
تحديد القيد المؤسسية الرئيسية والقيود الاقتصادية والمالية. وقد تم تقديم توصيات قصيرة الأجل وطويلة الأجل لإحداث نقلة نوعية نحو شراكة أقوى بين القطاعين العام والخاص، مع مشاركة أقوى من جانب السلطات المحلية.	الإنجاز 1: إجراء تحليل مؤسسي لإدارة النفايات البلاستيكية
تم طرح الأنشطة التجريبية الخمسة التالية في منطقة جربة بناء على مسح سريع حول استخدام البلاستيك في المؤسسات السياحية ومساواهات مع أصحاب المصلحة: (1) تعزيز أنشطة التواصل والتوعية في الفنادق؛ (2) إقامة شراكات بين المؤسسات والمنظمات غير الحكومية وتدعيم تضافر الجهود بينها؛ (3) تنشيط قطاع الغرف اليدوية؛ (4) البحث عن بدائل المنتجات البلاستيكية؛ و (5) وضع ميثاق للالتزام وعلامة بيئية للاستدامة.	الإنجاز 2: تصميم أنشطة تجريبية لدعم الحد من المواد البلاستيكية ذات الاستخدام الواحد في المؤسسات السياحية في منطقة جربة
أظهر مسح للشواطئ في النقاط الساخنة ذات الأولوية الملوثة بمواد البلاستيك أن البلاستيك هو أكثر أنواع نفايات الشواطئ شيوعاً وانتشاراً، حيث يمثل 77% من 9821 مادة من المواد التي تم جمعها. وفي إطار الشراكة مع المنظمات غير الحكومية المحلية، تم تدريب 66 شخصاً على إجراء مسح الشواطئ باستخدام منهجية البرنامج المتكامل للرصد والمتابعة والتقييم.	الإنجاز 3: إجراء مسح استقصائي عن النفايات على الشواطئ في المناطق الساخنة المختارة الملوثة بمواد البلاستيكية
تصميم موذج متكامل لقاعدة البيانات استناداً إلى نظام البيانات المفتوحة لدى وزارة البيئة. ⁴ ويتضمن التصميم: (1) إعداد تطبيق جديد لتلقي بيانات التلوث البلاستيكي وإدارتها؛ (2) مواصلة تطوير نظام البيانات المفتوحة الحالي؛ و (3) إعداد آداة لتحميل البيانات بصيغة إكسل.	الإنجاز 4: إنشاء قاعدة بيانات متكاملة للنفايات البحرية
تحقيق مخرجات النوعية والتواصل التالية لدعم الوزارة في إطلاق حملة توعية. ▪ إطار توعية وتواصل يتضمن الرسائل الرئيسية، والجماهير المستهدفة، وقونوات التواصل خطة نوعية وتواصل لتنفيذ حملة ذات ثلاثة سيناريوهات للموازنة المالية (منخفضة ومتوسطة ومرتفعة) ▪ وسائل التوعية والتواصل بما في ذلك شعار الحملة وكيبابروشور والملصقات.	الإنجاز 5: إعداد خطة نوعية وتواصل بشأن إستراتيجية ساحل من البلاستيك

تستطيع تونس تشغيل اقتصادها **بإطلاق الإمكانيات الكاملة للاقتصاد الأزرق**. ويقطن الشريط الساحلي على البحر الأبيض المتوسط في تونس الذي يبلغ طوله 1670 كيلومتراً ثالثي سكان تونس، أو 7.6 مليون نسمة، مما يجعل تونس في وضع جيد للاستفادة من مواردها البحرية والساحلية. في عام 2018، ساهم الاقتصاد الأزرق بالفعل بحوالي 14% من الناتج المحلي الإجمالي للبلاد. مثل السياحة الساحلية وصيد الأسماك وحدها 450,000 وظيفة.. وتنعم القطاعات الزرقاء الآخذة في التطور، مثل مشروعات الطاقة البحرية، وتربية الأحياء البحرية، والتكنولوجيا الحيوية البحرية، بامكانيات هائلة لخلق فرص العمل. ويع肯 لتونس أن تستثمر في اقتصادها الأزرق لتعزيز مستقبل اقتصادي أكثر استدامة وقدرة على الصمود.



ويشكل التلوث البلاستيكي **خطراً رئيسياً على الاقتصاد الأزرق في تونس**. ومن الملحوظ أن البحر المتوسط، الذي يدعم إنتاجية الاقتصاد الأزرق في تونس، في حالة يرث لها. وتعد السياحة الساحلية، التي تدفع عجلة التعافي الاقتصادي في تونس، القطاع الأكثر تضرراً. وإذا لم يتم اتخاذ ما يلزم من إجراءات للتصدي للتلوث بمواد البلاستيكية، فقد يتضاعف ثلاث مرات بحلول عام 2040. وتقترن بؤر التلوث البلاستيكي ذات الأولوية في تونس في مناطق ذات أنشطة اقتصادية مكثفة مثل المهدية والمنستير وصفاقس ومدنين.



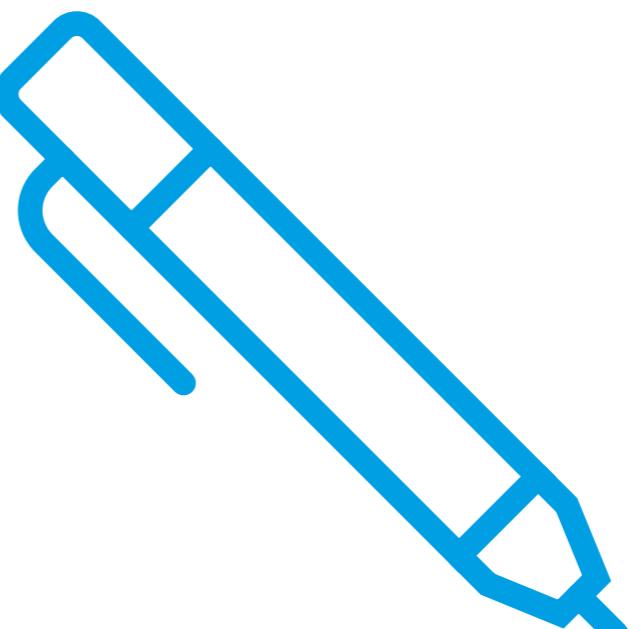
وأقامت تونس والبنك الدولي شراكة قوية للتصدي للتلوث البلاستيكي **وتطوير الاقتصاد الأزرق**. وفي إطار هذه الشراكة، أجرت الحكومة أول تقييم لحالة التلوث البحري بمواد البلاستيكية. واستناداً إلى هذا التقييم، وبالتعاون مع أصحاب المصلحة، بدأت الحكومة في تفعيل إستراتيجية "ساحل خال من البلاستيك" وفق مبادئ الاقتصاد الدائري. ويجري تصميم هذه الإستراتيجية بمشاركة أصحاب المصلحة على مستوى سلسلة القيمة الخاصة بالبلاستيك، بما في ذلك المجتمع المدني والقطاع الخاص.



وتهدف إستراتيجية "ساحل خال من البلاستيك إلى إنشاء "ساحل تونسي خال من البلاستيك من خلال اعتماد موذج دائرى شامل ومستدام"، بهدف تحفيز الابتكار وخلق فرص العمل. وستسهّل هذه الإستراتيجية، التي تصاحبها خطة عمل تنفيذية تتضمن تدابير ومشروعات ذات أولوية، في الإستراتيجية الوطنية للانتقال الإيكولوجي في تونس من خلال تشجيع اقتصاد إعادة تدوير البلاستيك. وسيؤدي التحول إلى الاقتصاد الدائري أيضاً إلى الحد من انبعاثات غازات الدفيئة. وستدعم إستراتيجية "ساحل خال من البلاستيك" تنفيذ خارطة طريق الاقتصاد الأزرق الواردة في التقرير الصادر بعنوان "ما وراء خط الساحل: نحو مستقبل أزرق قادر على الصمود في تونس"² وخاصة الريكيزة الثالثة (تعزيز الاستثمار) التي تتعلق بحماية البيئة والقدرة على الصمود في وجه تغير المناخ. وتشرف اللجنة التوجيهية المشتركة بين القطاعات المعنية بإستراتيجية "ساحل خال من البلاستيك" على إعداد هذه الإستراتيجية وستتابع تنفيذها.



وفي إطار الشراكة مع البنك الدولي، بدأت الحكومة بالفعل في تنفيذ إجراءات ذات أولوية تنسق مع إستراتيجية "ساحل خال من البلاستيك". تعرّض هذه المذكرة الفنية الأساسية التقدم المحرز في هذه الشراكة بين عامي 2022 و2023، مع التركيز على خمسة مخرجات رئيسية ونتائجها الرئيسية (الجدول 1).. كما تعتمد المذكرة على التقرير الفني السابق الصادر بعنوان "سواحل خالية من البلاستيك: مساهمة بلدان المغرب العربي للتصدي للتلوث البحري بمواد البلاستيك"³، وقد عرض هذا التقرير دراسة تشخيصية وأولية للخطيط الإستراتيجي.



⁴ يرجى زيارة هذا الموقع: <https://www.opendata-environnement.tn>

² البنك الدولي، 2024
³ البنك الدولي، 2022

الخلاصة



ستستفيد تونس من الاستمرار في نهج دورة الحياة لوقف التلوث البلاستيكي. وقد فرضت الحكومة بالفعل قيداً على إنتاج الأكياس البلاستيكية ذات الاستخدام الواحد واستيرادها وتوزيعها وحيازتها، وشارك المجتمع المدني في أنشطة تنظيف الشواطئ وزيادة الوعي بهذا الشأن. تعمل الحكومة أيضاً على تعزيز الشراكات مع أصحاب المصلحة في جميع أنحاء سلسلة القيمة للبلاستيك. فعلى سبيل المثال، وفي إطار الشراكة مع البنك الدولي، تم تدريب 66 شخصاً في منظمات غير حكومية محلية على إجراء مسوح للشواطئ باستخدام منهجية البرنامج المتكامل للرصد والمتابعة والتقييم. وستزيد إستراتيجية "ساحل خال من البلاستيك" من تسهيل وتعزيز المشاركة النشطة لجميع أصحاب المصلحة بحيث يتم اتخاذ الإجراءات اللازمة على مدى دورة حياة البلاستيك.

ويمكن للحكومة الآن النظر في إنشاء برنامج متعدد القطاعات لمكافحة التلوث البلاستيكي استناداً إلى إستراتيجية "ساحل خال من البلاستيك" وخطة العمل ذات الصلة. ويمكن أن تكون اللجنة التوجيهية المشتركة بين القطاعات المعنية ب استراتيجية "ساحل خال من البلاستيك" آلية تنسق طويلة الأجل بين القطاعات للتتصدي للتلوث بالمواد البلاستيكية، مع اتباع نهج الحكومة بأكملها.



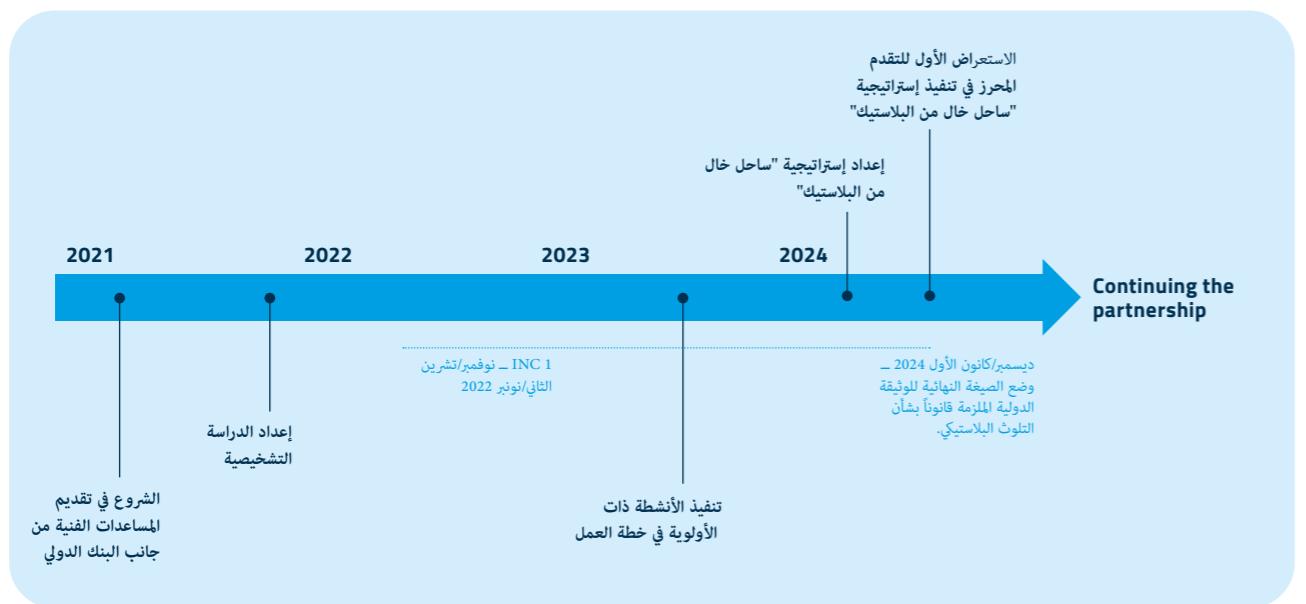
ويمكن أن يساعد أسلوب تنفيذ إستراتيجية "ساحل خال من البلاستيك"، بقيادة اللجنة التوجيهية المشتركة بين القطاعات، تونس على تنفيذ الوثيقة الدولية الملزمة قانوناً بشأن التلوث البلاستيكي بما في ذلك التلوث في البيئة البحرية. ومن المرجح أن تدعو هذه الوثيقة إلى اتخاذ إجراءات على مدى دورة حياة المواد البلاستيكية، بدءاً من الإنتاج وحتى التخلص النهائي منها. وعلى هذا النحو، فإن أسلوب تنفيذ إستراتيجية "ساحل خال من البلاستيك" على مستوى مختلف القطاعات سيتيح أساساً مفيدةً لتنسيق الإجراءات الوطنية بشأن الوثيقة الملزمة قانوناً بشأن التلوث البلاستيكي.



وستواصل تونس التصدي للتلوث بالمواد البلاستيكية لاطلاق الإمكانيات الكاملة لاقتصادها الأزرق. ويساندة فنية من البنك الدولي، ستواصل الحكومة تفعيل إستراتيجية "ساحل خال من البلاستيك" وخطة العمل الخاصة بها في إطار تنفيذ خارطة طريق الاقتصاد الأزرق. وسيواصل البنك الدولي تقديم مساعدته الفنية لمساندة الحكومة في أول استعراض للتقدم المحرز بشأن تنفيذ إستراتيجية "ساحل خال من البلاستيك". وستواصل هذه الشراكة التصدي للتلوث البلاستيكي وتعزيز الانتقال الإيكولوجي إلى مودج اقتصادي مستدام وشامل يحركه الاقتصاد الأزرق.



الشكل 1: الإطار الزمني للشراكة بين البنك الدولي وتونس للتتصدي للتلوث بالمواد البلاستيكية



Source: World Bank 2022.

الخطوات التالية الفورية

ستدعم إجراءات المتابعة الفورية التالية، بناءً على الإنجازات المستهدفة أعلاه والنقاش الوارد في القسم 2، تحول تونس إلى ساحل خال من البلاستيك

تفعيل إستراتيجية "ساحل خال من البلاستيك" بدءاً بالمشروعات ذات الأولوية، والمتابعة المنتظمة للتقدم المحرز في التنفيذ من خلال اللجنة التوجيهية المشتركة بين القطاعات المعنية ب استراتيجية "ساحل خال من البلاستيك".

تدعيم الآليات المالية لإدارة النفايات البلاستيكية من خلال مراجعة الضريبة⁵ البيئية لتمويل عمليات إدارة النفايات وفق مودج المسؤولية الممتدة للمنتج.

تعظيم الاستفادة من النظام العمومي لاستعادة وتشمين المخلفات المستعملة (إيكولف ECOLEF)⁶ بربط الأسعار بأسعار الارتفاعات البكر وضمان إمكانية تنبع التدفقات.

تدعيم الآليات المؤسسية لإدارة النفايات البلاستيكية ووضع برنامج شراكة ذي أولوية مع البلديات الساحلية.

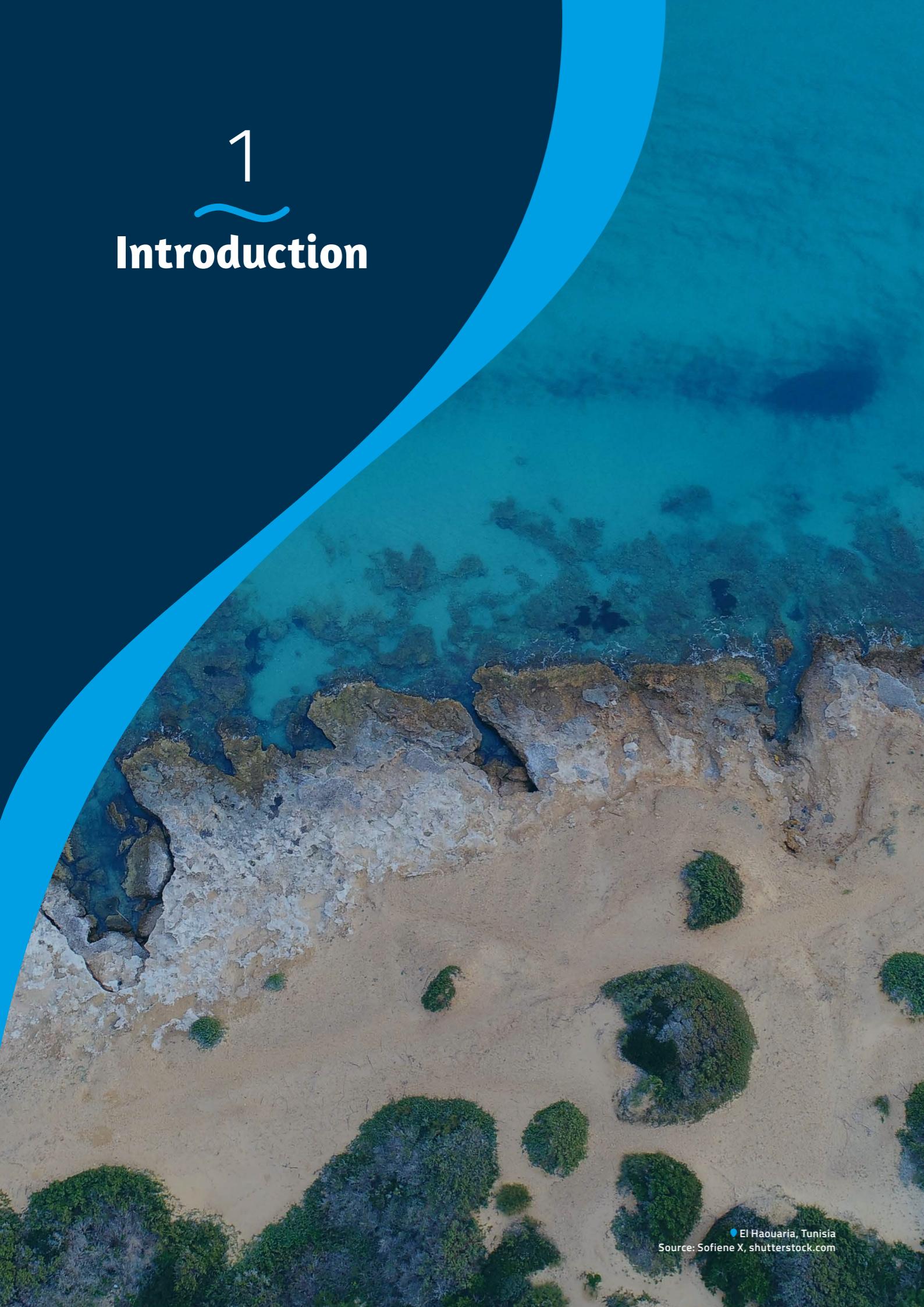
الاستثمار في إدارة النفايات البلاستيكية وتعزيز الشراكات بين القطاعين العام والخاص.

وضع خطة اجتماعية لعمال النفايات غير الرسميين وطرح مشروع تجريبي للتنمية بهدف تقييم جدوى الخطة.

⁵ الضريبة البيئية هي ضريبة تطبق على بعض المنتجات المستوردة، بسعر 7% من القيمة.
⁶ النظام العمومي لاستعادة وتشمين المخلفات المستعملة (إيكولف ECOLEF) هو النظام العام لاستعادة وإعادة تدوير نفايات التعبئة والتغليف، انظر الإطار 5

1

Introduction



Background

Tunisia's already modest economic recovery almost halted in 2023 amidst a severe drought, tight financing conditions, and the modest pace of implementing reforms. The economy grew by 0.4 percent in real terms during 2023, yet Tunisia's economy remained below pre-Covid levels. Agriculture was the main driver of the economic slowdown in 2023, declining by 11 percent as the drought forced the government to introduce irrigation restrictions. This highlights the urgency for Tunisia to adapt to climate change. The growth slowdown—especially in labor-intensive sectors—translated into higher unemployment and lower labor force participation. Unemployment grew to 16.4 percent in the fourth quarter of 2023, up from 15.2 percent in 2022.⁷

Continued tourism recovery from the pandemic contributed to lowering the current account deficit (CAD) in 2023. The CAD fell by two-thirds, from 12.4 billion Tunisian dinar (TD) (around US\$4 billion) in 2022, or 8.6 percent of gross domestic product (GDP), to TD 4.1 billion (around US\$1.3 billion), or 2.6 percent of GDP, in 2023. The GDP contributions of the tourism sector returned almost to its pre-Covid level (4.6 percent), while the total number of foreign visitors (8.1 million) was slightly higher than in 2019 (7.9 million). Tourism receipts remained a key source of foreign exchange for Tunisia, with a modest increase of 1.4 percent.⁸ In Tunisia, coastal tourism is the main tourism attraction, accounting for 95 percent of the tourism sector's annual GDP contribution. About 90 percent of tourism accommodation is in the coastal areas.⁹

Tunisia would benefit from developing its blue economy. The country's expansive 1,670-kilometer Mediterranean coastline provides access to various blue economy sectors. More than two-thirds of the population, equivalent to 7.6 million people, live in coastal areas, where coastal tourism and fisheries provide about 450,000 jobs. In 2018, the blue economy contributed to nearly 14 percent of the GDP.¹⁰ Emerging blue sectors such as offshore energy, mariculture, and marine biotechnology also hold great potential for job creation. By investing in the blue economy and ensuring the sustainable management of natural resources, Tunisia could secure a more resilient and inclusive economy that creates new jobs and economic opportunities.

Tunisia's blue economy depends on the health of the Mediterranean Sea. Yet the Mediterranean Sea is in a dire state, facing the triple threat of climate change, biodiversity loss, and intensifying pollution. Local sea levels are expected to rise between 0.15 meters and 0.33 meters by 2050, driving an increase in coastal flooding. Ocean warming and acidification are expected to have cascading impacts on marine and coastal ecosystems and biodiversity.¹¹ The Mediterranean Sea has lost 41 percent of its top predators, including marine mammals, between 1950 and 2011.¹² This decline could continue if left unchecked.

Plastic pollution is one of the main threats to the country's blue economy. Every year, Tunisia's economy faces losses due to plastic pollution, which harms the performance of multiple blue sectors such as coastal tourism, shipping, and fisheries. Coastal tourism is the hardest hit blue sector, being affected by economic costs associated with beach clean-up activities and lower touristic value due to the poorer quality of beaches.

About 17,000 tons of plastics enter the sea from the Tunisian coastline every year (Figure 2 on page 20). An estimated 20 percent of plastic waste remains uncollected and, even when collected, only 4 percent is reportedly recycled.¹³ Plastic pollution hotspots are concentrated in areas with high levels of economic activity, such as Nabeul, Mahdia, Monastir, Sfax, and Médenine (Box 1 on page 20).

⁷ World Bank 2024b.

⁸ World Bank 2024b.

⁹ World Bank 2023a.

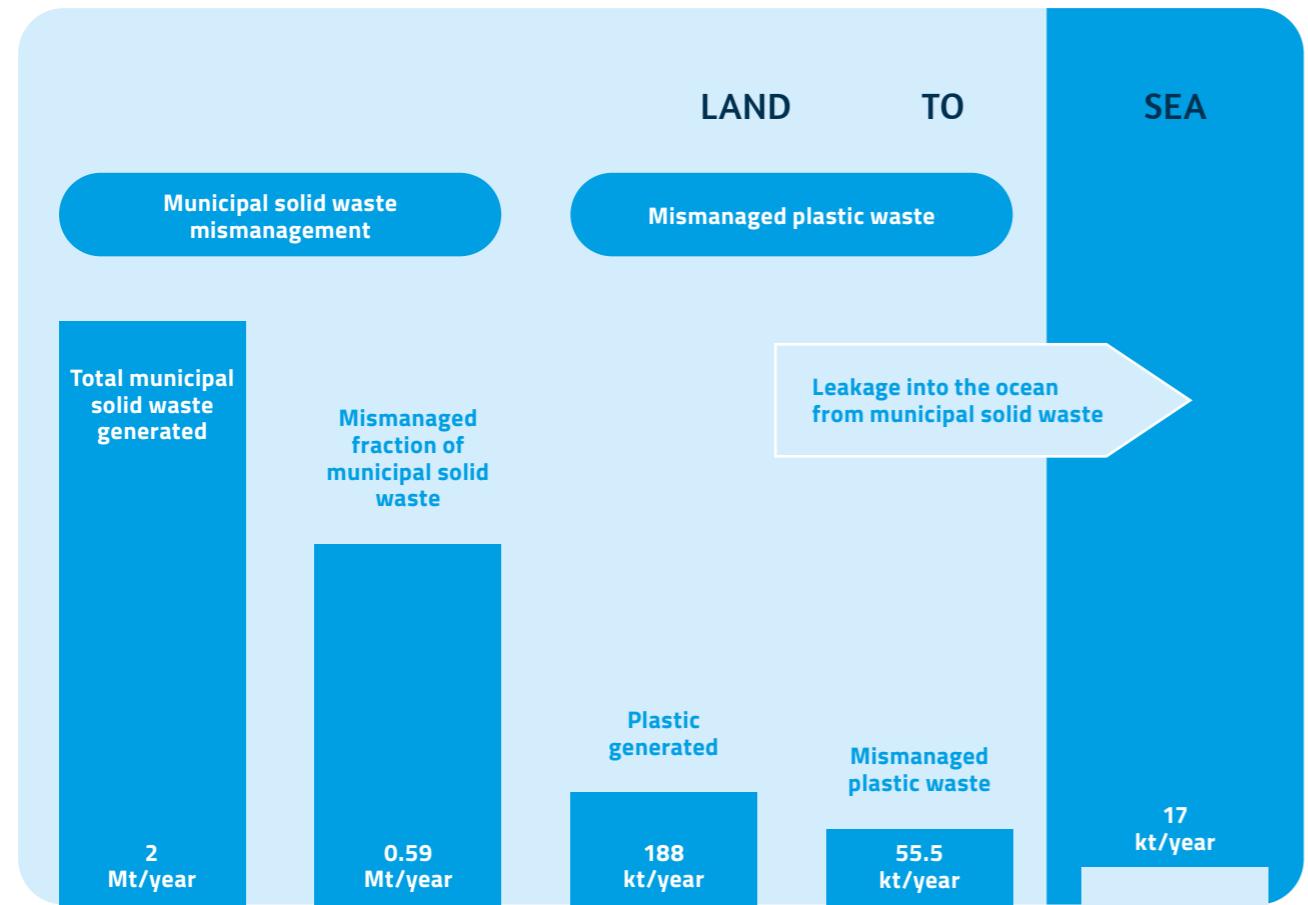
¹⁰ World Bank 2023a.

¹¹ Ali et al. 2022.

¹² Piroddi et al. 2017.

¹³ Dalberg Advisors, WWF Mediterranean Marine Initiative 2019.

Figure 2: Leakage of plastic waste to the Mediterranean Sea



Source: World Bank 2022.



¹⁴ World Bank 2022b.

Box 1 (continued)

Site	1	2	3	4	5	6	7	8	9	10	11	12	13
Jendouba	4	4	4	4	4	4	4	4	4	4	4	4	4
Beja	2	2	1	1	2	1	2	1	4	4	2	1	4
Bizerte	3	3	2	3	4	3	3	1	3	4	3	2	4
Ariana	3	3	2	3	3	3	3	1	4	4	3	2	4
Tunis	3	3	2	3	3	3	2	3	4	3	2	3	4
Ben Arous	3	3	2	3	3	3	2	3	4	3	2	3	4
Nabeul	3	3	2	3	3	3	2	3	4	3	2	3	4
Sousse	3	3	2	3	3	3	2	3	4	3	2	3	4
Monastir	3	3	2	3	3	3	2	3	4	3	2	3	4
Madhia	3	3	2	3	3	3	2	3	4	3	2	3	4
Sfax	3	3	2	3	3	3	2	3	4	3	2	3	4
Gabès	3	3	2	3	3	3	2	3	4	3	2	3	4
Médenine	3	3	2	3	3	3	2	3	4	3	2	3	4
Drivers													
Population	4	4	4	4	4	4	4	4	4	4	4	4	4
Amount of mismanaged waste	2	2	1	1	2	1	2	1	4	4	2	1	4
Amount of uncollected plastic waste	3	3	2	3	4	3	3	1	3	4	3	2	4
Quantity of plastic waste in unauthorized landfill	2	2	1	3	3	3	3	1	4	4	3	2	4
Environmental Status													
Amount of plastic waste leaked into the sea	3	2	2	3	3	2	2	3	4	3	2	3	4
Abundance of marine litter	3	3	3	2	2	2	2	2	4	3	3	2	3
Percentage of plastics in total marine litter	3	3	3	3	3	3	3	3	3	3	3	3	3
Percentage of medical/sanitary waste in total marine litter	1	1	1	1	3	1	1	3	2	1	3	1	1
Intensity of fishing activity and resulting waste	1	1	2	1	1	1	4	2	4	4	3	2	4
Total score	86	82	73	82	96	78	91	75	122	115	109	76	119
Class													
HOTSPOT(B)	HOTSPOT(B)	SENSITIVE(C)	HOTSPOT(B)	HOTSPOT(B)	SENSITIVE(C)	HOTSPOT(B)	SENSITIVE(C)	HOTSPOT(B)	PRIORITY HOTSPOT(A)	PRIORITY HOTSPOT(A)	PRIORITY HOTSPOT(A)	SENSITIVE(C)	PRIORITY HOTSPOT(A)
Negligible	Slight	Moderate	Negligible	Negligible	Moderate	Negligible	Moderate	Negligible	NOT(D)	NOT(D)	NOT(D)	Moderate	NOT(D)
Impact	Negligible	Slight	Moderate	Moderate	Severe								

P-HS (A): Priority Hot-Spots, HS (B): Hot-Spots, SENS (C): Sensitive Area, NOT (D): Neither Hot-Spots nor Sensitive Areas

Source: World Bank 2022.

Tunisia and the World Bank have developed a partnership to address plastic pollution using circular economy approaches.

A circular economy should build on sustainable production and consumption patterns that reduce and prevent waste generation. Transitioning towards a circular economy would stimulate innovation, enhance resource efficiency, and create new jobs. The government has already started taking action throughout the plastic value chain to move towards a circular plastic economy. For example, it has introduced Decree No. 2020-32 of January 16, 2020, which restricts the production, import, distribution, and possession of single-use plastic bags.¹⁵

The Tunisian government has also started operationalizing its *Littoral Sans Plastique* (LISP, or Plastic-Free Coastline) Strategy to address plastic pollution.

The LISP Strategy is based on an assessment of the status of marine plastic pollution in Tunisia¹⁶ that was prepared under the partnership between Tunisia and the World Bank using participative approaches. The LISP Strategy will help address a threat to the blue economy and, in so doing, will contribute to unlocking the full potential of the blue economy.

The vision of the LISP Strategy is to create “a plastic-free Tunisian coastline by adopting a circular, inclusive, and sustainable model”. To achieve this vision, five strategic objectives have been identified (Figure 3). The LISP Strategy was co-designed with stakeholders across sectors and throughout the plastic value chain (Figure 4 on page 24).

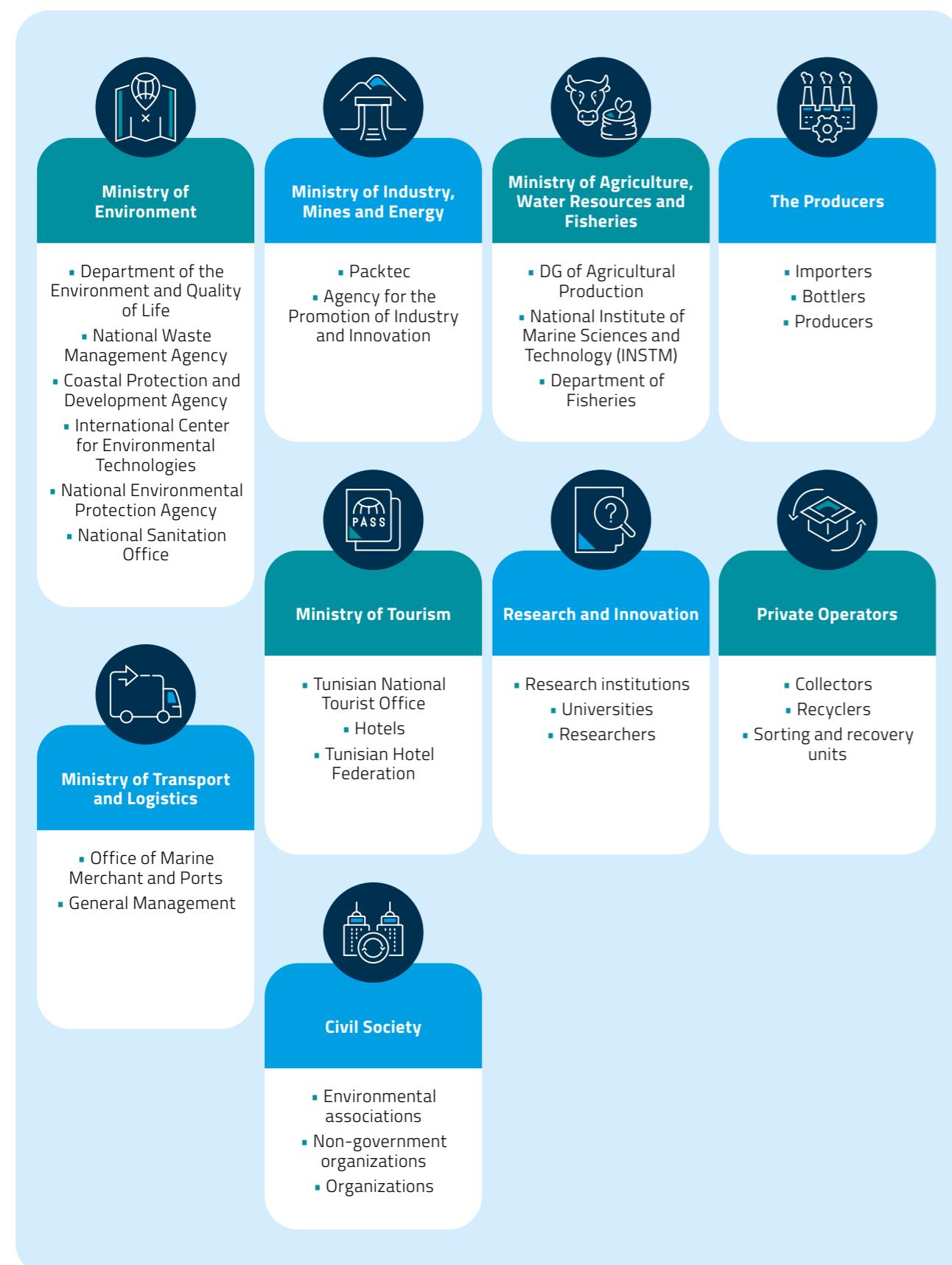
Figure 3: LISP Strategy and its strategic objectives



Source: Adapted from World Bank 2022.

¹⁵ The decree bans plastic bags except for those thicker than 40 microns and with a volume of more than 30 liters; those made of biodegradable materials; or ultralight bags used for weighing fruit and vegetables.

¹⁶ World Bank 2022b.

Figure 4: LISP Tunisia stakeholders**An operational Action Plan with concrete measures and projects supports the implementation of the LISP Strategy.**

A Comité de Pilotage (COPIL, or Steering Committee) for the LISP Strategy (LISP COPIL) has been established under the leadership of the Ministry of Environment. Comprising representatives from various sectors, including the environment, local affairs, finance, tourism, and shipping, the LISP COPIL provides strategic guidance for the development of the LISP Strategy and has already started overseeing the implementation of priority activities. The intersectoral COPIL is a unique national mechanism for coordinated cross-sectoral action to address plastic pollution.

Implementing the LISP Strategy will help Tunisia prepare for the future international legally binding instrument on plastic pollution, which will also address pollution in the marine environment. This instrument is currently being discussed by the Intergovernmental Negotiating Committee (INC) under the United Nations Environment Assembly.¹⁷ The LISP Strategy and its Action Plan encompass activities throughout the lifecycle of plastics, bringing together actors at all stages of the value chain. The LISP COPIL coordinates such multisectoral, multistakeholder actions. This implementation modality provides a solid foundation for national action and the implementation of the legally binding instrument in future.

The LISP Strategy will be a key instrument for Tunisia's ecological transition. The government prepared a National Strategy for Ecological Transition to "transform the current economic and social model, based on linear development, into a circular economy model tending towards green growth resilient to climate change and risks and crises, preserving the country's natural capital and its ecosystems, reducing inequalities social and territorial disparities, and contributing to reduce poverty through the creation of short value chains and jobs, while strengthening the capacities of present and future generations to adapt to a changing world".¹⁸ By promoting the sustainable production and consumption of plastics, the LISP Strategy will drive ecological transition and contribute to the objectives of the National Strategy for Ecological Transition, particularly Axis 4 (Sustainable Production, Consumption, and Fight Against Pollution).

Figure 5: National Strategy for Ecological Transition

¹⁷ In February 2022, at the resumed fifth session of the United Nations Environment Assembly, Resolution 5/14 was adopted to develop an international legally binding instrument on plastic pollution, including in the marine environment, with the aim to complete the negotiations by the end of 2024.

¹⁸ Government of Tunisia 2024.

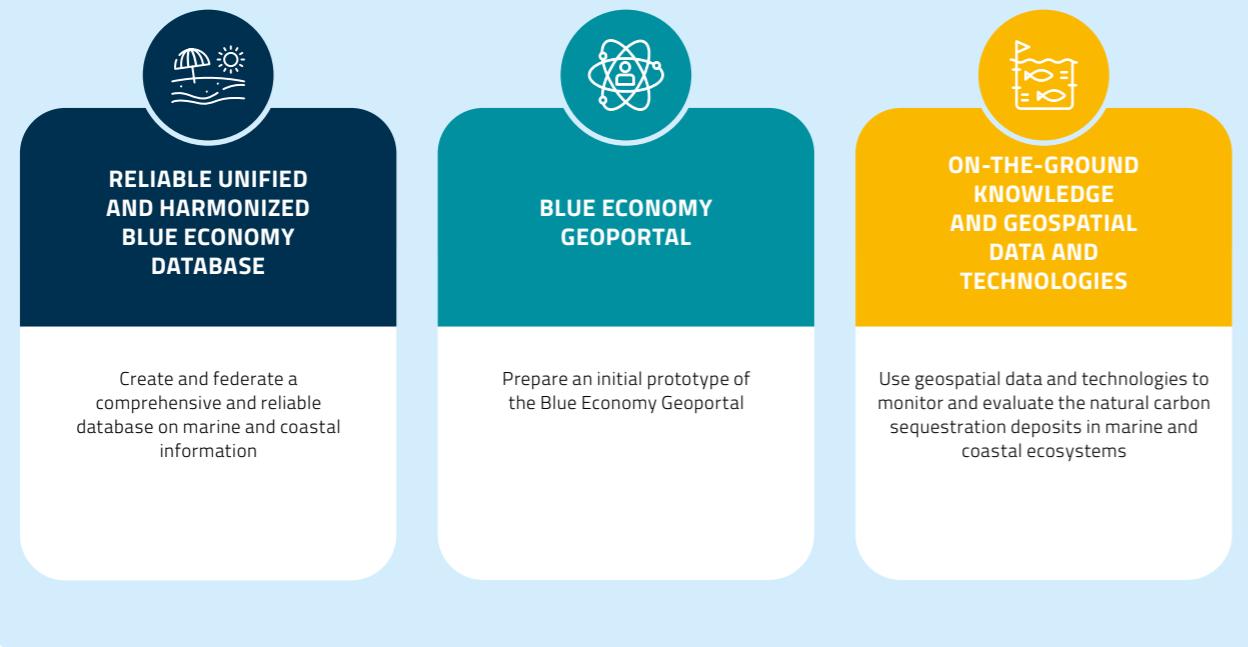
The LISP Strategy also supports the implementation of the Blue Economy Roadmap. With the World Bank's technical assistance, the government prepared a roadmap to develop its blue economy based on a diagnostic of the blue economy¹⁹ as well as an in-depth analysis of institutional capacities and policies, a review of public spending, an exploration of innovative financing, and analyses of sectors essential for unlocking the potential of key sectors while protecting the environment. This roadmap will support the National Strategy for Ecological Transition and sets forth three pillars of action (Box 2). The implementation of the LISP Strategy forms part of the third pillar of the roadmap (Fostering investment) (Box 3 on page 28).

Box 2: Blue Economy Roadmap: Towards a blue and resilient future for Tunisia

The Blue Economy Roadmap was presented in Chapter 3 of a synthesis report titled "Beyond the Shoreline: Towards a Blue and Resilient Future for Tunisia".²⁰ This report was prepared through extensive stakeholder consultations to identify a path for developing the blue economy in Tunisia. The roadmap encompasses key priority areas across the three pillars: (i) Data, analysis, and dissemination; (ii) Policy, institutional, and fiscal reforms; and (iii) Fostering investment.

Figure 6: Pillars of the Blue Economy Roadmap

Pillar I: Data, analysis, and dissemination

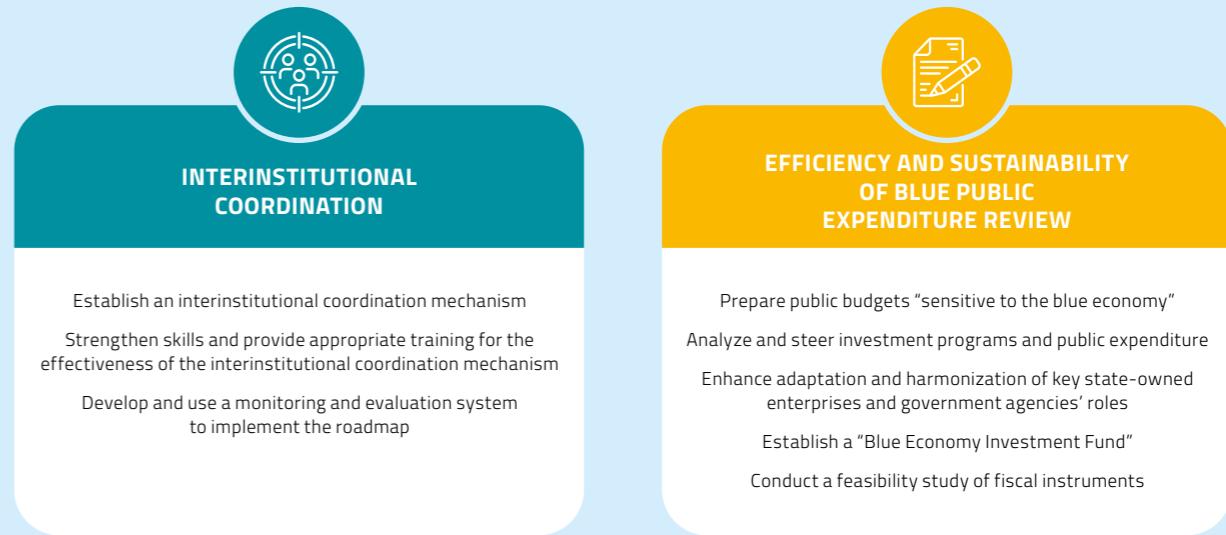


¹⁹ World Bank 2023c.

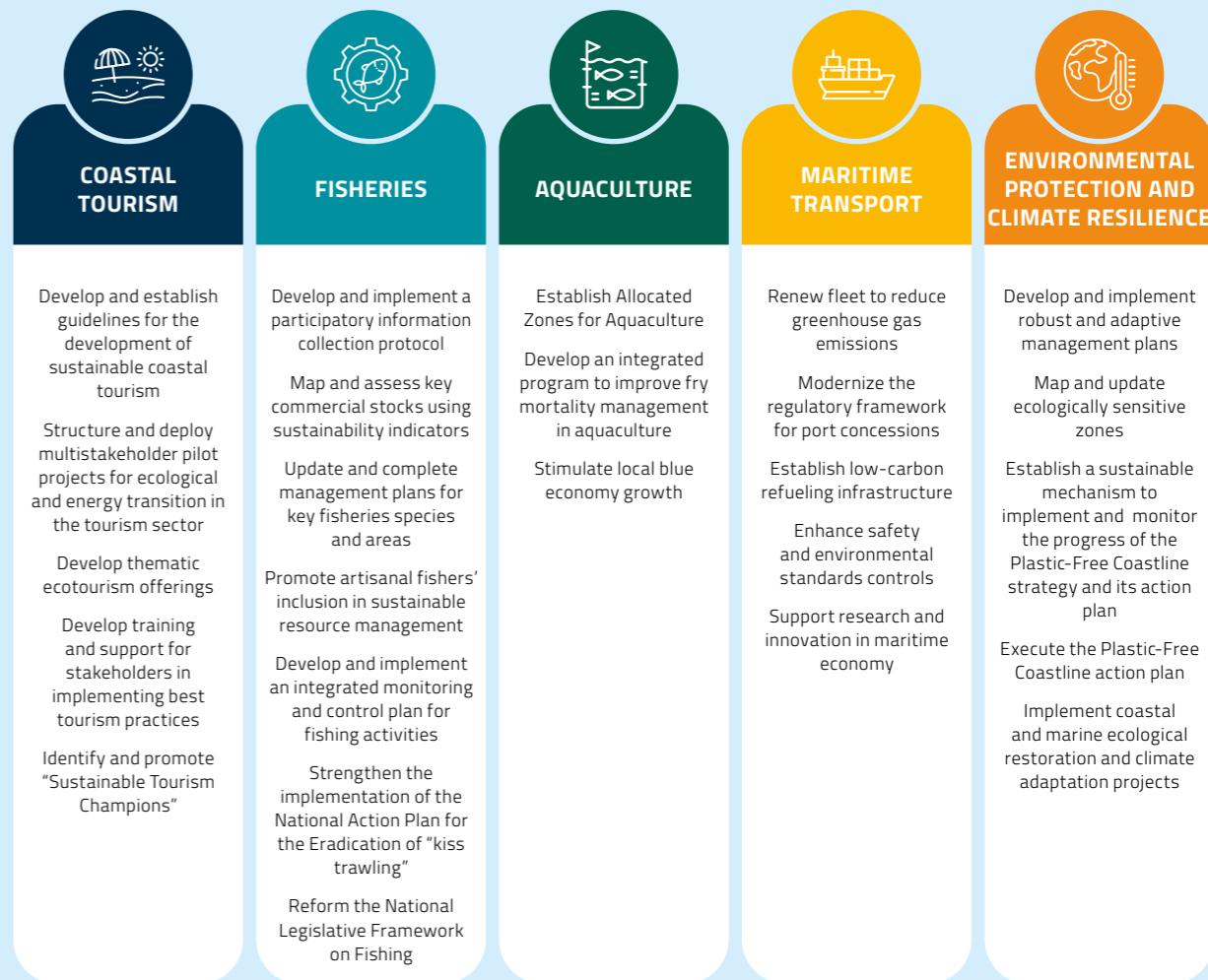
²⁰ World Bank 2024a.

Box 2 (continued)

Pillar II: Policy, institutional, and fiscal reforms



Pillar III: Fostering investment



Source: World Bank.

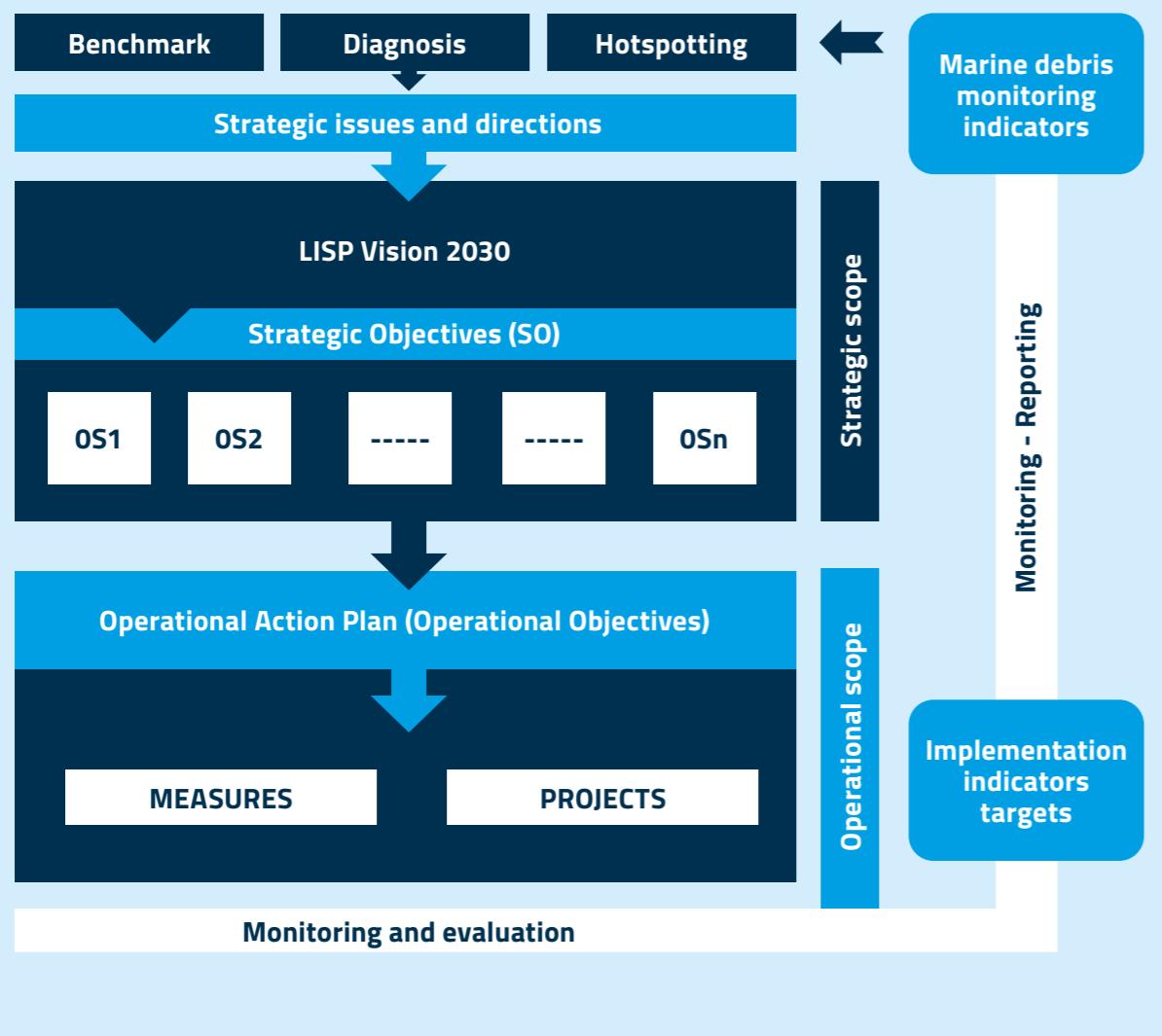
Initiating the implementation of the LISP Strategy

Box 3: Advantages of the LISP Strategy

The LISP Strategy is based on assessments and participatory strategic planning. The strategy and its formulation process have the following characteristics:

- **Participatory approach.** In Tunisia, more than 10 workshops were organized to engage stakeholders across the plastic value chain and across sectors. This participatory approach was used from the initial assessment to the formulation of the strategy to create a common understanding of the status of plastic pollution and develop shared ownership of the strategy.
- **Cross-sectoral nature.** The LISP Strategy brings together sectors such as fisheries, tourism, and transport and addresses plastic pollution in a comprehensive manner. As such, sector-specific plastic waste such as abandoned, lost, or otherwise discarded fishing gear is included as part of the LISP Strategy.
- **Action planning.** The LISP Strategy is accompanied by a detailed Action Plan, which specifies concrete actions that different actors will be taking to achieve the strategic vision.

Figure 7: The LISP Strategy formulation process



Source: World Bank 2022.

The Government of Tunisia has identified priority analytical work to operationalize the LISP Strategy. In partnership with World Bank, the following deliverables were prepared between 2022 and 2023. This background technical note presents a summary of these priority deliverables.

- **Deliverable 1:** Carry out an institutional analysis on plastic waste management.
- **Deliverable 2:** Design pilot activities to support the reduction of single-use plastics in tourism establishments in Djerba.
- **Deliverable 3:** Conduct beach litter surveys in selected plastic pollution hotspots.
- **Deliverable 4:** Develop an integrated marine litter database.
- **Deliverable 5:** Prepare a LISP communication plan.

These deliverables build on the diagnostic report²¹ as summarized in the preceding technical report.²²

These strategic deliverables holistically support the achievement of the LISP Strategy (Figure 8 on page 30). These priority deliverables were selected based on a SWOT (strengths, weaknesses, opportunities, and threats) analysis²³ of the LISP diagnostics report and stakeholder consultations. The SWOT analysis indicated the need to strengthen institutions involved with plastic waste management, which led to the formulation of Strategic Objective 1. To support formulating concrete activities to achieve the strategic objective, an institutional analysis was conducted (Deliverable 1). The beach survey (Deliverable 3) and the database design (Deliverable 4) responded to stakeholder needs expressed during the diagnostics. The stakeholders highlighted that field survey data on plastic pollution, especially on microplastics, is limited in Tunisia, and that it is crucial for improving baseline knowledge. They also pointed out that an integrated database for the entire plastics value chain would be useful for better management of plastic pollution. The design of pilot activities with the tourism sector (Deliverable 2) was selected given the importance of the tourism sector in Tunisia and the high impact of plastic pollution on this sector. Finally, a communication plan focusing on raising awareness of plastic pollution was developed (Deliverable 5). The LISP COPIL validated the selection of these priority activities.

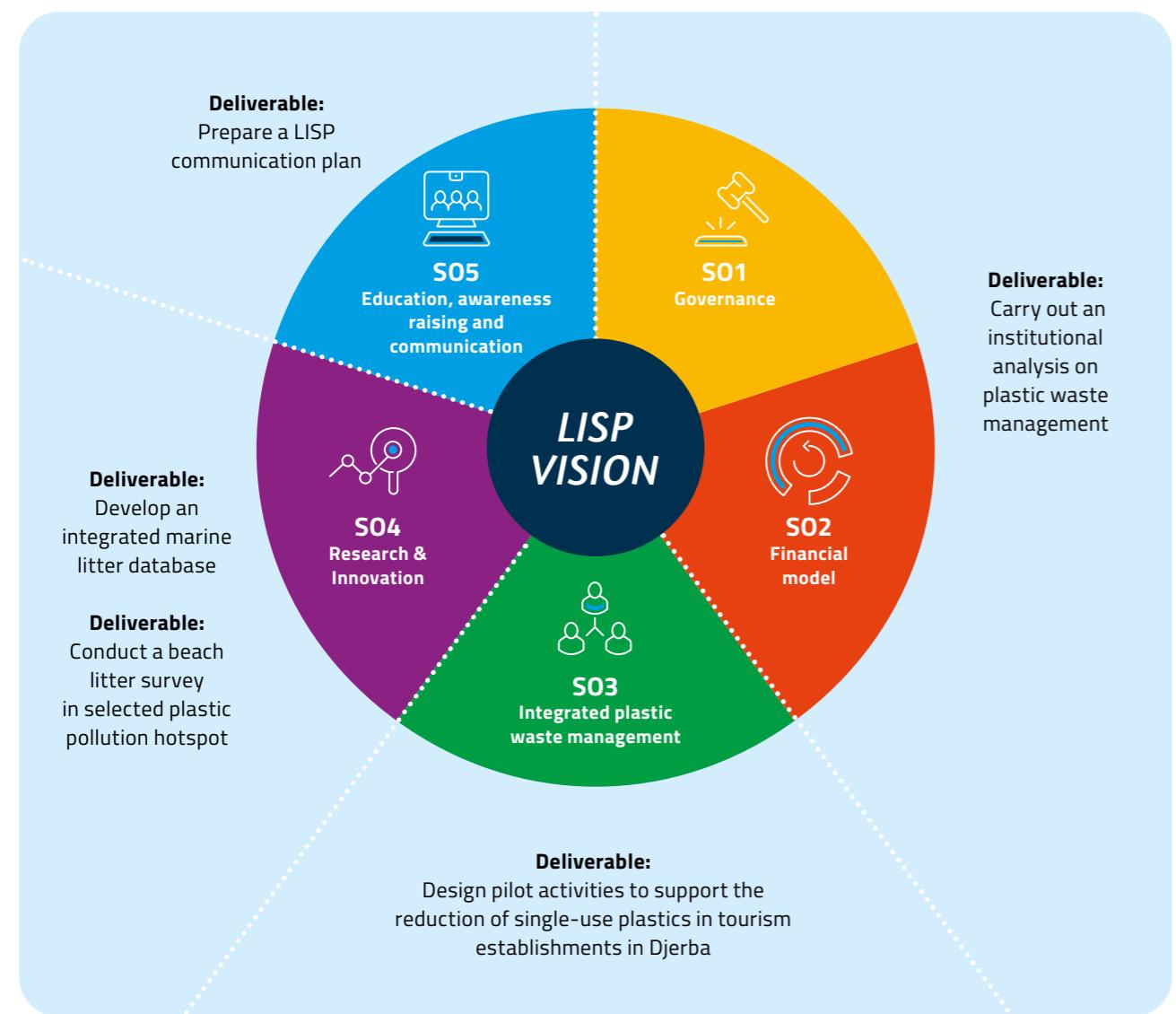
Implementing these deliverables created momentum for the Ministry of Environment to advance implementation of the LISP Strategy. These deliverables engage different sectors and multiple stakeholder groups, including the private sector and civil society. This participatory, cross-sectoral approach characterizes Tunisia's efforts for an ecological transition towards an inclusive and resilient society.

²¹ World Bank 2022b.

²² World Bank 2022a.

²³ World Bank 2022b.

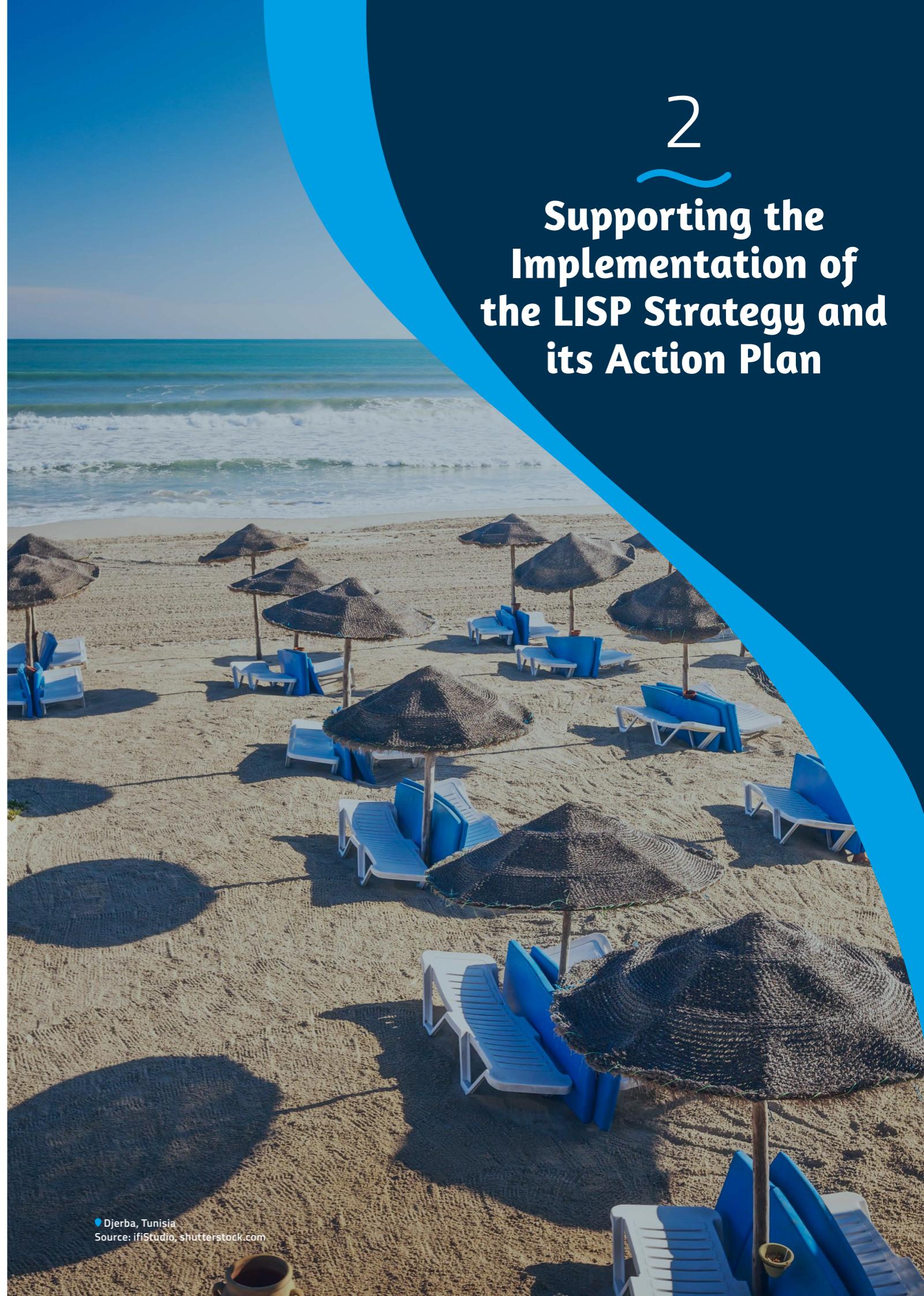
Figure 8: LISP Strategic Objectives and Deliverables



Source: World Bank.

2

Supporting the Implementation of the LISP Strategy and its Action Plan



Djerba, Tunisia
Source: ifiStudio, shutterstock.com

Deliverable 1: Carry out an institutional analysis on plastic waste management



Overview

This deliverable aimed to conduct a rapid institutional analysis on municipal plastic waste management to further understand institutional and policy constraints and identify possible actions to address them. This analysis supplements a SWOT analysis of the LISP diagnostic report, which assessed the existing institutional and governance framework (Box 4 on page 33).²⁴ The SWOT analysis revealed that institutional constraints led to sub-optimal plastic waste management. The analysis also showed limited participation of the private sector. Building on the diagnostics, this deliverable examined institutional, financial, and policy issues that could be addressed in the short and long term. The analysis focused on municipal solid waste management, in particular plastic waste, and the roles of existing systems such as ECO-LEF (Box 5) and financing instruments, such as the ecotax.

Box 5: The ECO-LEF system

ECO-LEF is a national system for recovering and recycling post-consumer packaging that is managed by the *Agence Nationale de Gestion des Déchets* (ANGed, National Waste Management Agency). Producers who place packaging on the Tunisian market participate through an annual contribution to the ECO-LEF system. The system's primary financial support is derived from the ecotax and is based on an annual activity report prepared by ANGed. This funding is supplemented by contributions from producers and the sale of purchased recyclable materials collected at ECO-LEF centers.

The largest proportion of waste collected by the ECO-LEF system is PET (polyethylene terephthalate) and HDPE (high-density polyethylene). ANGed currently has the following in the ECO-LEF system: 35 collection points; 243 approved private collection companies, of which 175 are operational; and 150 approved recycling units, of which only 65 are operational. Informal workers (*Barbéchas*) play a significant role in the collection of plastic packaging. Collected plastic packaging is sent to the ECO-LEF system, to formal companies operating outside the ECO-LEF system, or to transporters that take the goods to the next level in the recycling chain. The quantities of packaging material collected and recycled within the ECO-LEF system have decreased from 15,800 tons in 2009–2010 to less than 3,000 tons in 2020, of which more than 70 percent was plastic.²⁵

²⁴ World Bank 2022b.

²⁵ World Bank 2022b.

Box 4: Legal and regulatory mechanisms in Tunisia

Tunisia already has a set of legal instruments to address plastic pollution. The main instruments are summarized in Table 2. Table 3 summarizes the main institutional and regulatory challenges identified in the diagnostic report.

Table 2: Existing legal instruments in Tunisia

Year	Law or Decree	Description
1965	N°65-2 (1965/amended 1972)	Creation of the Office of Merchant Marine and Ports
1975	Law N°75-33 (14 May 1975)	Organic Law of the Municipalities
1985	Decree N°85-56 (2 January 1985)	Regulating discharges of waste into the environment
1995	Act 95-72 (24 July 1995)	Creation of the Coastal Protection and Development Agency
1996	Act 96-41 (10 June 1996)	Waste and control of its management and disposal
1997	Decree 97-1102 (2 June 1997)	Creation of ECO-LEF, on the management of packaging, including plastic
1998	Decree No. 98-2092 (28 October 1998)	Establishment of the list of large urban agglomerations and sensitive areas that require the preparation of master plans for development
2005	Decree 2005-2317 (22 August 2005)	Creation of ANGed, a national civil body specializing in waste management, and responsible for ECO-LEF
2007	Law 2007-1866 (23 July 2007)	Hygiene regulations for waste management areas managed by local authorities; establishes the authority to impose fines
2018	Code (9 May 2018)	Code of Local Authorities
2020	Law N°2020-30 (30 June 2020)	Social and Solidarity Economy
2020	Decree N°2020-32 (16 January 2020)	Established domestic-market restrictions on the production, import, distribution, and possession of plastic bags

Table 3: Main institutional and regulatory challenges

Institutional challenges	Regulatory challenges
<ul style="list-style-type: none"> ▪ Integrated plastics waste management requires clarification of roles and responsibilities between different actors. ▪ All actors need to be engaged to address marine plastic pollution (including producers and tourist establishments). ▪ There is a need to optimize the financial and organizational management of the current packaging recovery system ECO-LEF. ▪ Logistics for waste management and plastic pollution control need to be improved. ▪ Private sector needs to be further involved to prevent marine plastic pollution. ▪ Working conditions of informal waste collectors need to be improved. ▪ Responsibility for monitoring marine plastic pollution needs to be clearly defined. ▪ Responsibility of the actors to apply the laws needs to be enforced. 	<ul style="list-style-type: none"> ▪ Develop language to cover all aspects spanning the entire plastics value chain. ▪ Develop producer incentives for eco-design in the regulatory framework. ▪ Develop incentives for the use of recyclable products in the regulatory framework. ▪ Regulate the contribution of producers for their plastic products placed on the market. ▪ Make the necessary control and monitoring tools available to the relevant sectors. ▪ Clarify the responsibilities of institutions involved in waste management through legislation. ▪ Formalize the activity of the informal waste management sector to meet existing frameworks.



Results

Main challenges

The analysis identified the following main challenges to plastic waste management:

- **Limited involvement of municipalities in the collection of plastic waste.** This has negatively impacted waste management services due to the large number of informal workers who comb through municipal garbage cans and containers.
- **Limited integration of the informal sector,** which collects nearly 80 percent of recyclable and valuable plastics and is involved in recycling and recovery activities. Informal waste workers often operate in precarious conditions and lack access to social benefits.
- **Insufficient involvement of the private sector,** which deprives the sector of significant potential to improve service quality while increasing efficiency and effectiveness. This constraint has a long-term impact because establishing a partnership with the private sector is a gradual process that will take time.
- **Limited engagement of households in sorting.** Despite the additional effort required, sorting at the source would have multiple benefits, including reduced collection costs; the reclamation of better-quality, sorted recyclable materials that would have a higher value when returned; and the extension of landfill life spans.
- **Not fully embracing an integrated approach to waste management,** which is that the chain of activities—including sorting, collection, transfer, and treatment or recovery—should be closely interlinked and technically and economically interdependent. Plastic waste management needs to be managed in an integrated manner.
- **Limitations of the ECO-LEF system.** The national waste management agency, ANGed, is a public institution that lacks the flexibility to operate in a market characterized by volatile oil prices and private competition.
- **Limited involvement and coordination of public and private coastal stakeholders** such as *Agence de Protection et d'Aménagement du Littoral* (APAL, Coastal Protection and Development Agency), hoteliers, and beach operators, who play a key role in reducing plastic leakage into the environment.
- **Low levels of involvement by key stakeholders** such as fishers, fishers' associations, and diving companies and clubs, who can play a role in collecting plastic waste on the sea surface or seabed.
- **The governance of the existing ecotax** needs to be clarified and codified to target eligible activities and contribute to the effective application of the extended producer responsibility (EPR) principle for targeted waste streams.

Public-private partnership constraints

Local authorities have been unable to develop a lasting, effective partnership with the private sector on waste collection and cleaning services. Even though the practice was initiated in the 1990s, private-sector involvement in municipal solid waste collection and transportation remains limited, at about 4.5 percent.²⁶ The main constraints relating to private sector involvement in plastic waste management in municipal solid waste are:

- **The legal framework only allows recourse to public procurement regulations.** Law No 2008-23 governing concessions does not apply to municipalities. It was only in 2018 that Organic Law 2018-29 on the local authority code allowed the use of concessions and public service delegation contracts, but this has not yet been implemented.
- **Inadequate and fragmented resources** fail to meet the financial needs of waste management.
- **Limited maturity of project preparation** due to an absence of feasibility studies and inaccuracy of basic data.
- **Unsuitable and sub-optimal contractual provisions,** including contract durations that are limited to five years, obligations of means, an incomplete price revision formula, and so on.
- **Limited monitoring and control by municipalities.**

ANGed works with private operators to build controlled landfills. This partnership with the private sector began with five-year service contracts under public procurement agreements. For new projects and extensions on existing landfills, ANGed is now moving towards more advanced partnerships with the private sector in the form of concessions or public-private partnerships.

Economic and financial constraints

Funding for waste collection comes from local tax revenues (especially the *taxe sur les immeubles bâtis* [tax on built buildings]). However, due to the low tax collection rates—the national average is 12 percent—these revenues only cover about 17.5 percent of costs.²⁷ Eighty percent of household waste transfer and landfilling is financed by allocations of the environmental protection tax (*taxe pour la protection de l'environnement*, TPE, or ecotax) transferred by the state to ANGed. The remaining 20 percent is financed by municipalities.

Regarding the ecotax, the study made the following observations.

- **It is based on the principle of extended producer responsibility (EPR).**
- **The membership-based financing system is difficult and time-consuming to administer** and cannot be effective or fair without restrictive measures for those who do not pay ("free rider" effects).
- **Public expenditure management could be strengthened to ensure that the proceeds of the ecotax are used to finance activities that reduce the environmental impacts of the taxed products**—that is, products that are harmful to the environment.
- **The ecotax rate has nearly tripled** (from 2.5 percent to 7 percent), while the need for waste management of the taxed products has not necessarily increased at the same rate.
- **Different products are taxed at the same rate via the ecotax,** even though it is possible to modulate the rate according to the product's environmental impact, design, and the anticipated waste management costs they generate.

The following main economic and financial constraints related to plastic waste management were identified:

- **Insufficient local tax resources** limit the potential to modernize the waste collection system and its infrastructure. Waste management operation needs to be functional before starting selective waste collection.
- **The ecotax is economically and environmentally inefficient,** given that 20 percent of plastic waste is not collected and only 4 percent is reportedly recycled.²⁸
- **The limitations of paid waste collection.** Creating value for recoverable waste in the absence of an effective collection system led to informal waste collection activities. Paid collection needs to be professionalized, and informal waste collection needs to be regulated. The transition to such a professionalized system would require an effective social management plan.
- **Uncertain economic viability** because revenues from the sale of plastics to recyclers are very low compared to the amounts paid to collectors.²⁹ Revenues from the sale of plastics to recyclers and members of the ECO-LEF system were TD 1.2 million (around US\$383,000) in 2021 and TD 1.3 million (around US\$415,000) in 2022. Revenues from resale could contribute to financial equilibrium, especially to cover the additional cost of selective collection or upstream sorting.

²⁶ GIZ 2014.

²⁷ MALE 2021.

²⁸ Dalberg Advisors, WWF Mediterranean Marine Initiative 2019.

²⁹ For PET (polyethylene terephthalate) plastic, the price paid by ANGed is TD 0.75 per kilogram, while the price paid by recyclers is TD 0.25 per kilogram.



Recommendations

It is recommended that the current public sector-led system transition to one that is led by stronger partnerships between public and private sectors, and where local authorities play a more prominent role.

Short-term recommendations

- Optimize the ECO-LEF system by:** (i) developing procedures for defining and systematically readjusting the two parameters crucial to the system's financial viability (collector remuneration and the resale price to recyclers, indexed to the price of virgin resins), and (ii) ensuring the traceability of flows from production to recovery.
- Develop priority partnerships with coastal municipalities.** A priority partnership program with coastal municipalities, starting in hotspots, could be developed with the private sector to initiate sorted waste collection in selected neighborhoods.
- Implement a program to improve the collection of beach litter and cleaning of beaches** by engaging tourism establishments such as hotels and restaurants to reduce plastic pollution.
- Mobilize stakeholders to reduce land- and sea-based litter** by developing partnerships with key stakeholders such as fishers' associations, marine leisure companies, and port managers.
- Develop a social plan for informal waste workers** to improve health and hygiene conditions. The formalization of the informal collector could be supported on a smaller scale to assess its feasibility.

Long-term recommendations

Institutional aspects

- Involve municipalities** as central players in the management of plastic waste alongside municipal waste management and in close coordination with ANGed.
- Define new institutional mandates for ANGed** as a regulator and controlling organ. A gradual, well-planned transition from the project management of controlled landfills towards a model led by municipalities or inter-municipal entities could be beneficial. ANGed could, on behalf of municipalities that so wish, carry out the construction and operation of treatment and disposal facilities on a contractual basis. ANGed could also provide technical support to municipalities and other relevant actors to promote integrated plastic waste management.
- Develop an advanced and sustainable partnership with the private sector** for municipal solid waste management.
- Reform and expand the ECO-LEF system** to support local authorities in organizing and professionalizing waste collection and sorting by providing technical and financial assistance and promoting eco-design and the recyclability of plastic products.

Financial aspects

The financing scheme for plastic waste management could be based on:

- Local tax resources.** Efforts to improve these resources could be pursued and intensified.
- Revenues from the sale of sorted recyclables.** Instead of being fixed, revenues could be the result of a competitive bidding process or, at least, indexed to the price of virgin resins.
- An allocation from the ecotax** to cover all or part of the additional costs generated by selective collection. These additional costs could also consider the savings generated by the extraction of plastic on the cost of collection and landfilling.

Reforming how the ecotax is managed could make it a more effective instrument for applying EPR principles. The governance of ecotax management needs to be clarified and codified to target eligible activities. Producers should be held financially liable for the costs of managing the waste generated by their products and the effects of these products throughout their lifecycle. Stakeholder consultations, including the private sector, would be crucial for this reform process.

Capacity development

- Enhance municipalities' capacity to prepare projects** (using feasibility studies, by presenting basic data, and so on) to facilitate participation by the private sector.
- Improve contractual provisions** to address current limitations such as five-year contract limits, obligations of means, and the incomplete price revision formula.
- Strengthen monitoring and control by municipalities.**

Deliverable 2: Design pilot activities to support the reduction of single-use plastics in tourism establishments in Djerba



Overview

This deliverable was carried out to design pilot activities to reduce the use of single-use plastics in hotels and other tourism facilities in Djerba,³⁰ given the importance of coastal tourism in Tunisia and the economic impact of plastic pollution on this sector. This deliverable was implemented in close collaboration with relevant municipalities and hotels to identify upstream solutions to prevent and reduce the use of single-use plastics, in close cooperation with the private sector. To understand the current use of plastics in hotels, a rapid survey was conducted across four hotels in Djerba. Possible pilot activities were conceptualized based on the survey and stakeholder consultation workshops.



Results

The most used plastic items in tourism establishments in Djerba were garbage bags, plastic packaging, water bottles, and plastic straws. Other plastic items such as key cards, disposable plastic cutlery, and plastic covers scored lower, suggesting less widespread use in hotels.

Based on the survey results and consultation with the stakeholders, the following four potential pilot activities were identified:

- **Enhance communication in hotels.** This pilot activity would focus on improving communication within the hospitality sector to raise awareness about plastic waste reduction initiatives. It would involve developing effective communication strategies, such as training sessions and workshops for staff, informative signage, and engaging with guests to promote responsible plastic usage. Local communication campaigns could be launched targeting tourism areas in line with the national LISP Strategy.
- **Develop synergistic partnerships between hotels and NGOs.** This activity would aim to foster collaborative partnerships between stakeholders involved in plastic waste reduction efforts. This would involve engaging local organizations, non-governmental organizations (NGOs), and government agencies to work together towards a common goal. The objective would be to leverage synergies and pool resources to maximize the impact of plastic waste reduction initiatives (Figure 9).
- **Revitalize the craft sector.** This activity would focus on revitalizing the local craft sector by promoting traditional and sustainable materials, such as textiles and pottery, as alternatives to plastic. The activity would involve supporting and empowering local artisans, providing training and resources, and creating market opportunities for eco-friendly products (Figure 10).
- **Research alternatives to plastic products.** This activity would involve conducting research into alternative products that could replace single-use plastic items in the hospitality sector. For example, in Djerba, reusable cutlery kits could be manufactured out of a local species of reed rather than plastic.
- **Develop a commitment charter and eco-label for sustainability.** This pilot activity would focus on developing a charter and an eco-label to recognize and reward hotels that demonstrate a strong commitment to sustainable practices and plastic waste reduction. It could also involve creating a set of criteria and guidelines for hotels to follow, implementing a certification process, and promoting the eco-label to enhance the reputation and marketability of participating hotels.

³⁰ Djerba is an island off the coast of Southern Tunisia.

Figure 9: Bag made in Djerba from textile waste



© Soumaya Ayadi

Figure 10: Example of bags made locally in Djerba



© Soumaya Ayadi



Recommendations

The following next steps are recommended:

- ✓ **Develop projects for selected pilot activities.** The government and actors from the private tourism sector (such as hotels) could select pilot activities from the four proposals above, based on their interests, and further develop and test the chosen ideas for potential replication and upscaling.
- ✓ **Develop economic or prestige incentives for tourism establishments.** Either economic incentives (such as tax reductions or grants) or prestige incentives (in the form of awards or certificates that acknowledge commitment to sustainability) could be developed to help engage tourism establishments in their efforts to reduce the use of single-use plastics.
- ✓ **Localize the strategy.** The implementation of the LISP Strategy should ideally be tailored to specific local contexts to address the needs of local communities. Tailor-made solutions could emerge from consultations and dialogues with local stakeholders. A long-term vision specific to Djerba and in line with the LISP Strategy could be adopted for the local strategy.

Deliverable 3: Conduct a beach litter survey in selected plastic pollution hotspot



Overview

This deliverable aimed to improve field data on plastic pollution in Tunisia. Under this deliverable, a field survey was conducted at Tunisia's plastic pollution hotspots to characterize beach litter and to identify the most common litter types. In doing so, the deliverable aimed to contribute to the monitoring of marine plastic pollution, which will provide evidence for future decision-making.

In partnership with local NGOs, and in line with the Integrated Monitoring and Assessment Program's (IMAP's) methodology of the Convention for the Protection of the Mediterranean Sea Against Pollution (the Barcelona Convention),³¹ sampling was conducted across nine beaches in four plastic pollution priority hotspots: Mahdia, Sfax, Tunis, and Djerba (Figure 11). These beaches were selected based on the Integrated Monitoring and Assessment Guide's beach selection criteria.³² The sampling protocol used for this survey is included in [Annexure 1](#). With the participation of local NGOs, 66 people were trained in beach surveying using the IMAP methodology, of which 27 were trained in Tunis, 7 in Mahdia, 18 in Sfax, and 14 in Djerba.

Figure 11: Locations of field surveys



© Nicole Weber/World Bank

³¹ See UNEP Decision IG.22/7: "Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria." https://wedocs.unep.org/bitstream/handle/20.500.11822/6090/16ig22_28_22_07_eng.pdf

³² UNEP 2016.



Results Macroplastics

The analysis showed that plastic was the most common type of beach litter, representing 77 percent (7,560 items) of the 9,821 items collected, sorted, counted, and weighed. In terms of weight, the 10 most common items accounted for 76.6 percent of the total weight.

Table 4: Ten most common macroplastic items by weight

Item description	Weight (kg)	Percentage of total weight
Nets and pieces of net >50 cm (G54) ³³	41.4	22.2%
Bottles (including identifiable fragments) (G200)	18.4	9.9%
The part that remains from rip-off plastic bags (G5)	17.2	9.2%
Ceramic fragments >2.5cm (G208b)	17.2	9.2%
Plastic/polystyrene pieces >2.5 cm <50 cm (G76)	13.9	7.5%
Drink bottles (G7/8)	10.1	5.4%
Clothing and rags (for example, clothing, hats, towels) (G137)	6.5	3.5%
Other wood <50 cm (G171)	6.3	3.3%
Heavy-duty sacks (for example, fertilizer or animal-feed sacks) (G36)	6.2	3.3%
Plastic caps and lids (including rings from bottle caps/lids) (G21/24)	5.7	3.1%
Total	143	76.6%

Source: World Bank.

³³ See Annex I: MED POL List for Beach Marine Litter Item of UNEP/MED WG.555/5. Guidelines for Monitoring Riverine inputs of Marine Litter. https://wedocs.unep.org/bitstream/handle/20.500.11822/43052/23wg555_05_eng.pdf?sequence=1&isAllowed=y

In terms of the number of pieces collected, the 10 most common item types accounted for 7,841 of the 9,821 items collected (79.8 percent), while the remaining 1,983 items (20.2 percent) were distributed among other 65 item types. Five out of the 10 most common types, in terms of the number of items collected, were single-use plastics, representing 5,550 pieces: plastic caps and lids (including rings from bottle caps/lids) (G21/24); cigarette butts and filters (G27); the part that remains from rip-off plastic bags (G5); drink bottles (G7/8); and crisps packets/sweets wrappers/lolly sticks (G30/31).

An analysis of the 1,301 items with identifiable origins found that 98.2 percent could be traced back to Tunisia, indicating that most of the beach litter found in the plastic pollution hotspots are from activities within the country.

Table 5: Key results of macrolitter survey

Total number of items collected	9,821
Number of item categories found	75
Total weight	187 kg
Plastic fraction of total collected	77%
Number of categories of single-use plastics on top 10 items found	5
Number of brands identified	123
Percentage of collected items with identified origins	13.2%
Percentage of recognizable items identified as Tunisian	98.2%

Source: World Bank.

Microplastics

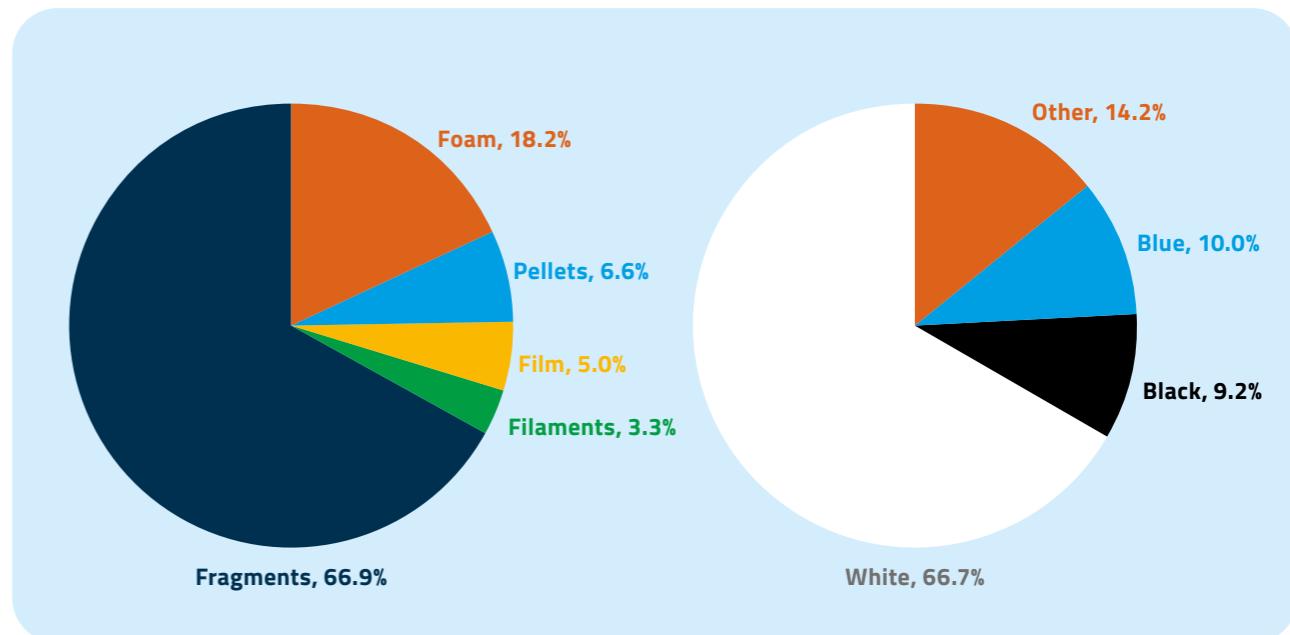
Microplastics (size 1mm–5mm) were sampled and analyzed using the methodology of the 2013 report of the "Guidance on Monitoring of Marine Litter in European Seas", previously used by Tunisia. The sampling protocol followed International Rocha Conservation and Hope (2018).³⁴ The results showed that fragments (66.9 percent) and microplastic foam (32.3 percent) were the most common types of microplastics sampled, demonstrating that the majority of microplastics are secondary microplastics³⁵ rather than primary microplastics.³⁶ Most of the microplastics identified were white (66.7 percent), blue (10.0 percent), or black (9.2 percent) (Figure 12). There was a declining geographical trend in the quantity of microplastics from north to south (Figure 13). This trend may be associated with the efficiency of waste management, level of tourism and other industrial activities, and the population size of nearby coastal cities. Further surveys and analyses are needed to better understand this trend.

³⁴ International Rocha Conservation and Hope 2018.

³⁵ Microplastics are plastics less than 5 mm. Secondary microplastics are microplastics generated from the breakdown of larger plastics.

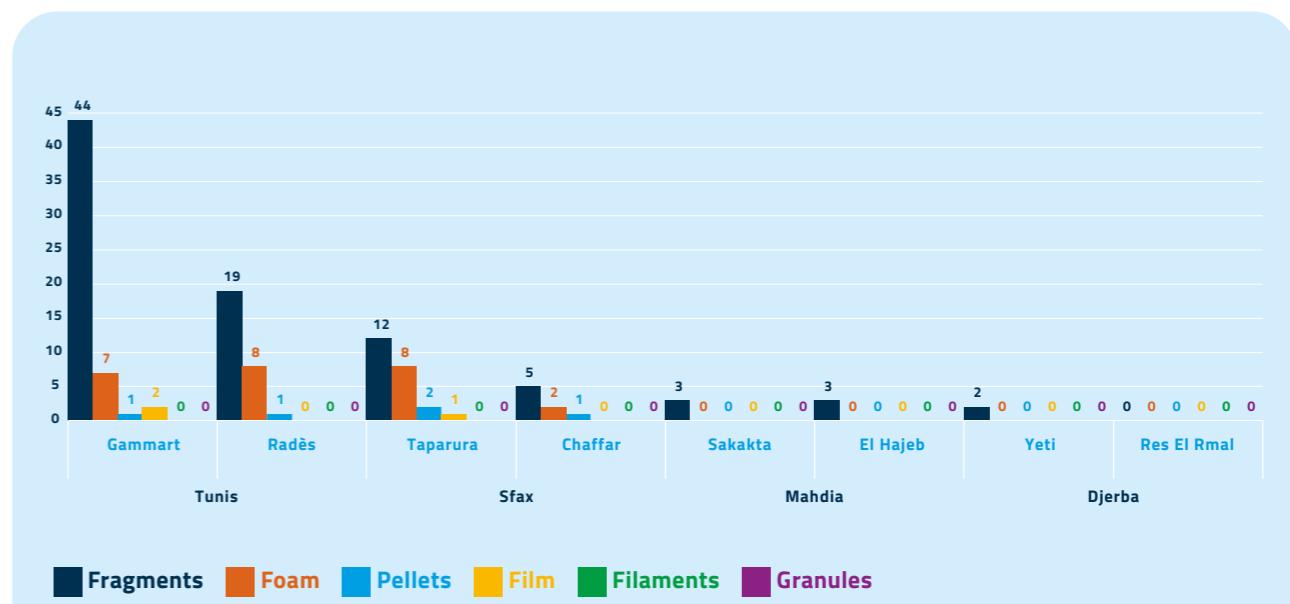
³⁶ Primary microplastics are those that are produced in a micro-size range (less than 5 mm) They are manufactured at this size, such as for cosmetics.

Figure 12: Microplastics collected, by type (left) and color (right)



Source: World Bank.

Figure 13: Types and number of microplastics identified in the beach surveyed



Source: World Bank.



Recommendations

The following recommendations are derived from the results above:

- Reduce the problematic and unnecessary use of single-use plastics.** The field survey showed that single-use plastics account for most beach litter. Reducing the production and unnecessary use of single-use plastics would play an important role in preventing plastic leakage into the environment.
- Establish a national baseline for monitoring.** Establishing a national baseline would help Tunisia monitor progress in its efforts to stop plastic pollution and monitor the status of plastic pollution. A baseline would also be useful when implementing the future international legally binding instrument, as it would help inform the setting of a reduction target. Additional field surveys would contribute to establishing such a baseline.
- Strengthen data management of monitoring data.** An integrated national monitoring database that incorporates data from different sources, including ongoing projects that address plastic pollution, would help monitor the status and trends of plastic pollution (See Deliverable 4).
- Establish partnerships with civil society.** This deliverable demonstrated that civil society organizations can actively contribute to monitoring plastic pollution, especially beach litter. The following steps can be taken to strengthen the partnership between the government and civil society:
 - Train NGOs to collect data on beach litter using the standardized IMAP protocol, and to clearly communicate results to policymakers and local communities
 - Set up a system to enable NGOs to track and analyze collected data over time and share the data with the Ministry of Environment using a standardized data format. This will enable the government to incorporate citizen science data
 - Run awareness-raising programs to encourage citizens to participate in data collection
 - Ensure coordination between NGOs and local authorities to facilitate data collection and analysis.
- Raise awareness about plastic pollution.** The field survey showed that most of the litter with identifiable origins can be traced back to Tunisia. It is therefore crucial to raise awareness among Tunisian citizens to prevent littering, improve plastic waste management, and reduce leakage of waste to the marine environment. The LISP Strategy presents measures and projects to raise awareness under Strategic Objective 5.
- Address the knowledge gap on microplastics.** Further research is needed to understand the status and sources of microplastic pollution in Tunisia. Additional locations need to be surveyed to enhance scientific knowledge. Raising awareness about microplastic pollution would help strengthen partnerships with civil society.

Deliverable 4: Develop an integrated marine litter database



Overview

Effectively monitoring plastic pollution requires a database that integrates different data sources as well as sectoral information on both sea- and land-based plastic pollution. Such an integrated data management system will be crucial for making decisions, formulating policy, and evaluating management actions relating to plastic pollution management. It could also be used to monitor the progress and impact of the LISP Strategy.

To support the design of such an integrated data system, a database concept was prepared with a focus on collecting data for the Common Indicators on marine plastic pollution under the IMAP of the Barcelona Convention/Mediterranean Action Plan. The Common Indicators include beach litter, seafloor litter, and floating microplastics.³⁷ Data standards for these indicators are defined and available through the IMAP Pilot InfoSystem.³⁸ An integrated national database would enable Tunisia to report to the IMAP InfoSystem on these Common Indicators. This reporting model could also serve as the basis for future national reporting under the upcoming legally binding instrument.

Current status

Tunisia has a solid foundation for an information system on environmental data in the form of the Open Data⁴⁰ system, which is managed by the Ministry of Environment, and SIGAPAL, which is managed by APAL. These existing systems could serve as the basis for a coordinated and integrated marine litter data database. However, the stability and accessibility of the SIGAPAL⁴¹ system is of concern.

Box 6: Strengthening capacity for monitoring marine plastic pollution

Monitoring the status of plastic pollution is crucial for assessing the impact of management measures. Virtual training was therefore held to strengthen monitoring capacity. The training focused on monitoring seafloor macrolitter, floating macrolitter, floating microplastics, and microplastic in sediments. The training drew on France's experience in implementing the European Union Marine Strategy Framework Directive for Marine Litter (D10) and the Barcelona Convention. It provided information on field sampling techniques, extraction techniques, and laboratory characterization used in the French monitoring program. Data management using the database system (DALI, after DATA Litter)³⁹ was also presented.



Source: World Bank.

³⁷ Common Indicator 22: Trends in the amount of litter washed ashore and/or deposited on coastlines; Common Indicator 23: Trends in the amount of litter in the water column including microplastics and on the seafloor; Common Indicator 24: Trends in the amount of litter ingested by or entangling marine organisms, focusing on selected mammals, marine birds, and marine turtles.

³⁸ For more information on the IMAP Pilot Info System, go to <http://www.info-rac.org/en/infomap-system/imap-pilot-platform>.

³⁹ <https://doc-e-is.pro/dali/>

⁴⁰ See <https://www.opendata-environnement.tn>

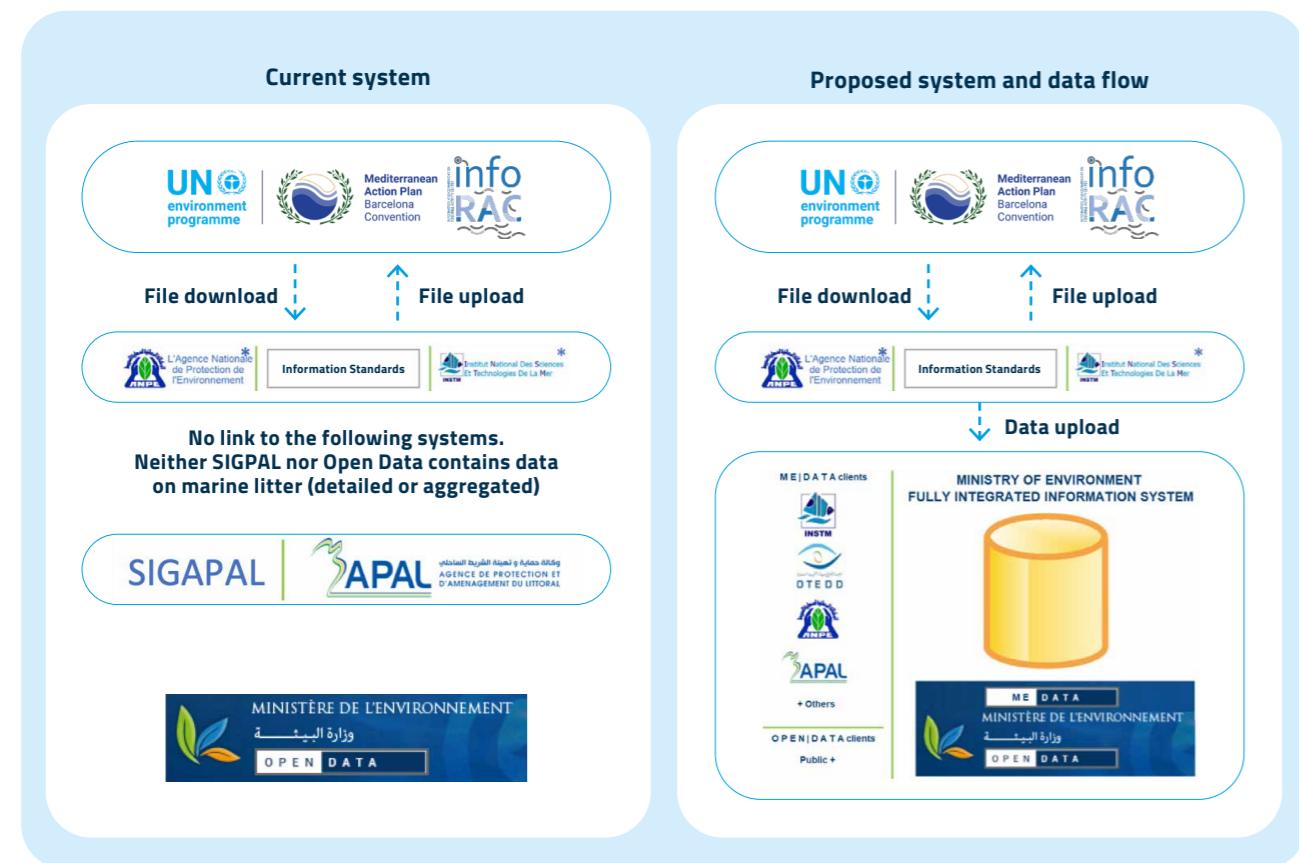
⁴¹ See <https://www.sigapal.tn>

Proposed design

The proposed database design enhances the existing Open Data system to encompass data related to plastic pollution in Tunisia's coastal areas. The following actions could be taken to implement the proposed design (Figure 14):

- **Develop a new application, "ME|Data".** A new application module could be developed to receive and manage plastic pollution data using the Excel-based information standard for the IMAP Common Indicators. The application would include an SQL database,⁴² an API (application programming interface)⁴³ to receive data from the spreadsheet, a user interface for data storage validation and navigation, and a user registration system. The API would allow interoperability with the data-loading tool.
- **Further developing the existing Open Data system by:**
 - Adding marine litter indicators to datasets and an API to enable periodic downloading of validated indicator data
 - Enhancing the existing API to allow authorized client systems to request and receive indicator datasets
 - Integrating the system with the Global Partnership on Marine Litter digital platform⁴⁴ through the existing Open Data API as needed.
- **Develop an Excel data loading tool.** Develop a Microsoft Excel tool using VBA (Visual Basic for Applications) to enable automatic data upload to the ME|Data online application for marine litter data.

Figure 14: Proposed design of integrated monitoring database



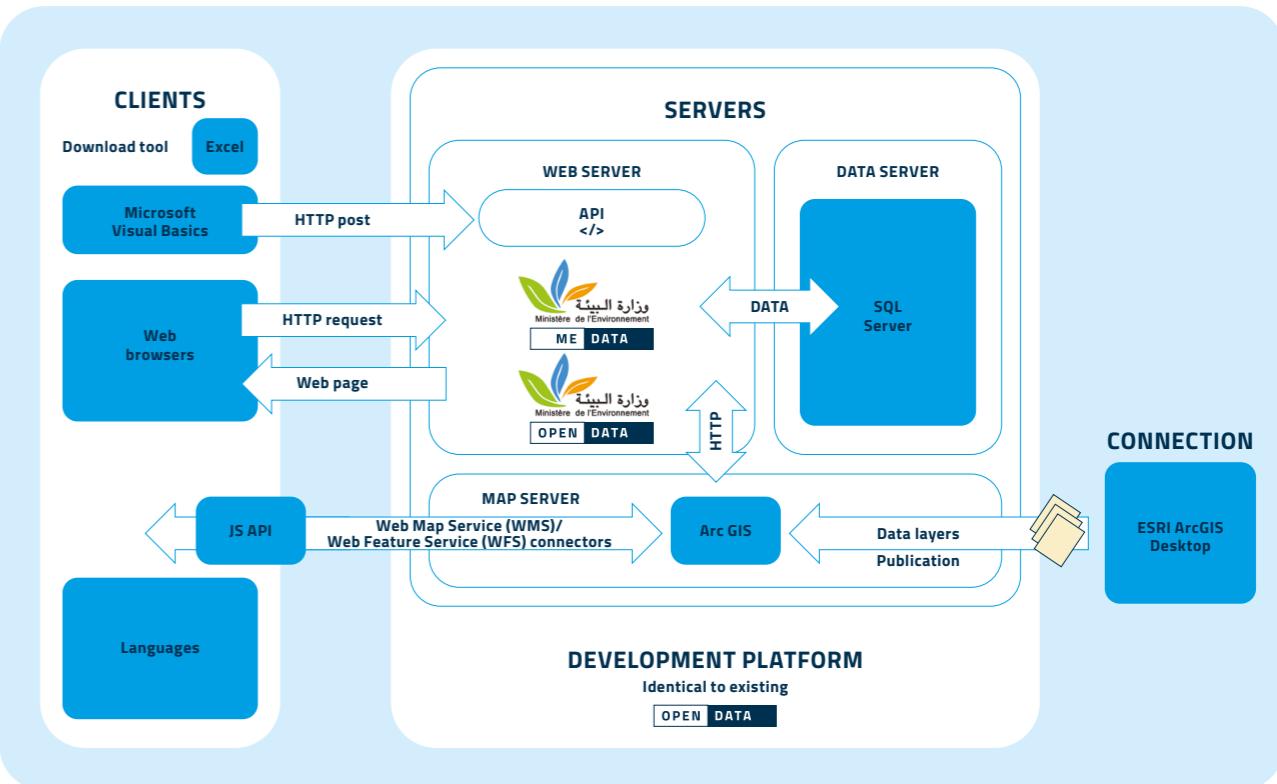
Source: World Bank.

⁴² Databases that use SQL, a programming language for relational databases.

⁴³ API is a code that allows multiple software to communicate.

⁴⁴ See <https://digital.gpmarinelitter.org>

Figure 15: Proposed architecture of enhanced Open Data system



Source: World Bank.



Recommendations

- ✓ The key recommendation is to develop and implement an integrated database system based on the proposed design. The development process would probably include the following steps:
 - Prepare a detailed design
 - Develop a prototype
 - Set testing protocols.
- ✓ Clarify the data flow and the role and responsibilities of stakeholders. Although the proposed design for an integrated database can accommodate changes in the roles and responsibilities of database users, it will be crucial to clearly define the roles and responsibilities of each organization involved in monitoring and data collection, and to establish the dataflow between them.

Deliverable 5: Prepare a LISP communication plan



Overview

This deliverable aimed to support the government by preparing a communication plan to engage wider stakeholders in the implementation of the LISP Strategy. The communication plan focused on developing a campaign to raise awareness of, and stimulate behavioral changes in, citizens towards the more sustainable production and consumption of plastics. A set of communication products was developed, and the Ministry of Environment has already started using the materials to carry out a digital communication campaign (Figure 16).



Results

The following outputs were prepared to support the Ministry of Environment in executing a communication campaign.

- A communication framework was prepared**, defining communication objectives, key messages, communication channels, and the basis for monitoring the impact of the communication campaign. Key messages were proposed around three aspects: economic impact, environmental impact, and proposed actions.
- A communication plan** focusing on a communication campaign with three budget scenarios (low, medium, and high) was prepared. The plan followed the AIDA model to capture attention, generate interest, build desire, and encourage action (Box 7).
- Communication assets were developed** to enable the immediate implementation of the campaign. These assets included a campaign logo, leaflets, posters, and graphics, which were provided in editable digital formats and accompanied by a guideline with good practices for using them.

Figure 16: Communication products posted on the Ministry of Environment's Facebook account



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Box 7: The awareness, interest, desire, and action communication model

The communication plan was developed based on the AIDA (awareness, interest, desire, and action) communication model to convey targeted messages through strategic channels. By following the AIDA model, the campaign can tailor its content and approach to effectively engage and motivate the target audience across different media channels. The table below presents each step and media options that could be considered.

Table 6: The awareness, interest, desire, and action communication model

Step	Description	Media
Awareness	Primary aim is to raise awareness of the problem of plastic pollution and introduce the campaign's brand, messages, and graphic designs.	Media will use high-impact channels that offer good visibility such as broadcast.
Interest	After awareness is raised, the next step is to generate interest in the topic. More content needs to be provided and more careful targeting of audiences will be needed.	The choice of media is guided by the public's ability to read and absorb more detailed information. Media will include: <ul style="list-style-type: none"> Social networks Public relations Press advertising.
Desire	Having aroused the public's interest, the next step is to get them to "want" to change their behavior towards plastic waste.	The choice of media here focuses on channels designed to convey broad content and open dialogue. These include: <ul style="list-style-type: none"> Public relations Social networks Print (flyers, posters).
Action	Focuses on behavioral changes in line with the campaign objective.	The channels used here are those that allow the most precise targeting and understanding, including: <ul style="list-style-type: none"> Leaflet distribution Door-to-door visits Social networks.

Source: World Bank.

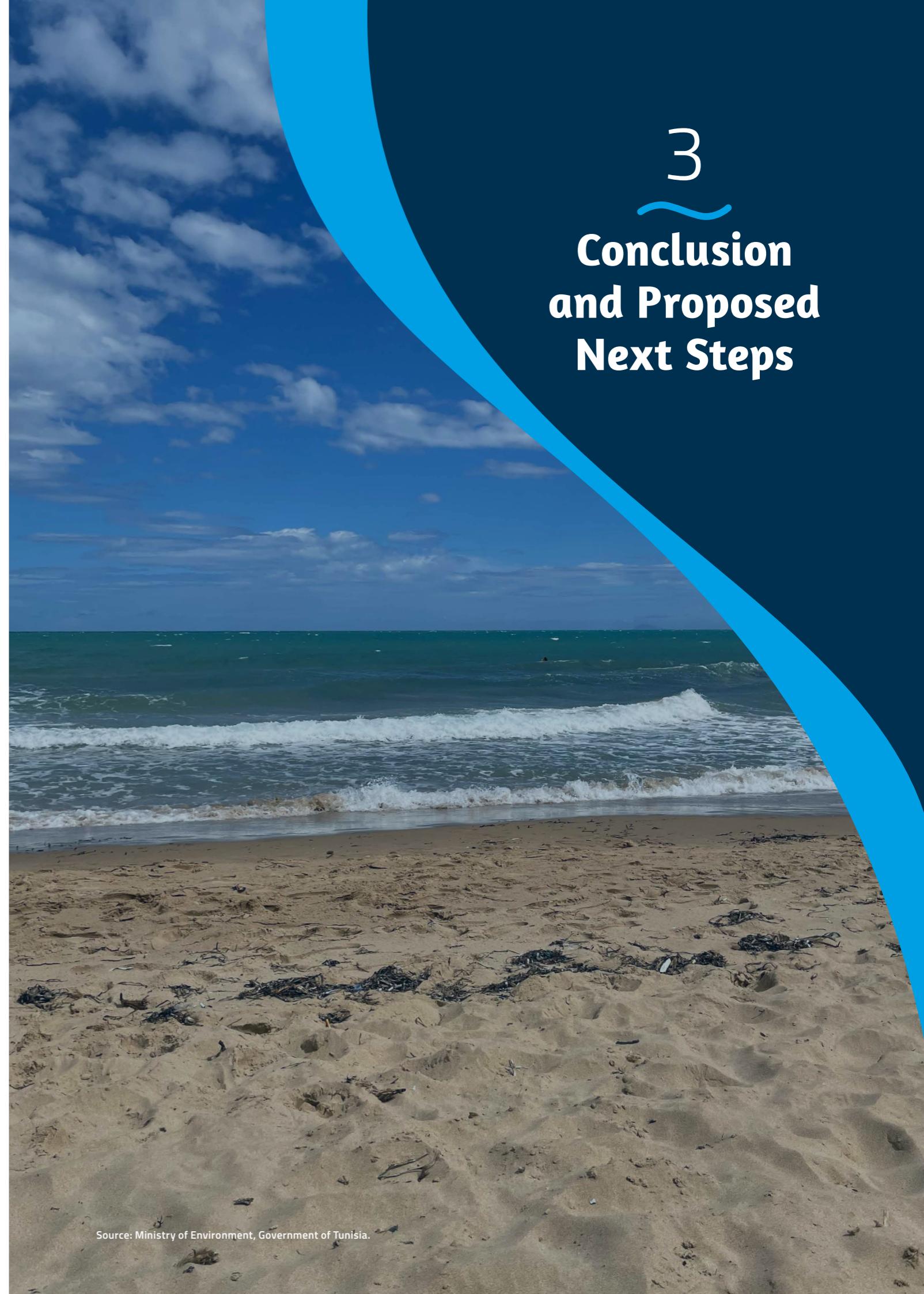


Recommendations

The next steps are for the Ministry of Environment to execute a campaign based on the communication plan.

A local communication agency should be able to support the ministry in this task. In doing so, the following aspects are worth considering:

- Support and endorsement.** Active support and public endorsement by the Ministry of Environment would help increase credibility and encourage wider engagement. A dedicated campaign platform on social media could be established.
- Collaboration with stakeholders.** Collaboration with LISP stakeholders (including the NGOs that contributed to the development of the LISP Strategy and took part in the field survey [Deliverable 3]) could increase the expertise, resources, and networks available for rolling out the campaign. The LISP COPIL could coordinate and build partnerships with stakeholders for the campaign.
- Resource allocation.** A successful campaign requires sufficient human and financial resources. The Ministry of Environment's communications team could oversee the campaign to ensure smooth execution.
- Collaboration with media and influencers.** Collaboration with media outlets and influencers could amplify the campaign's reach and impact. Journalists, bloggers, and social media influencers with an interest in environmental issues could be engaged to reach different audiences.



Source: Ministry of Environment, Government of Tunisia.

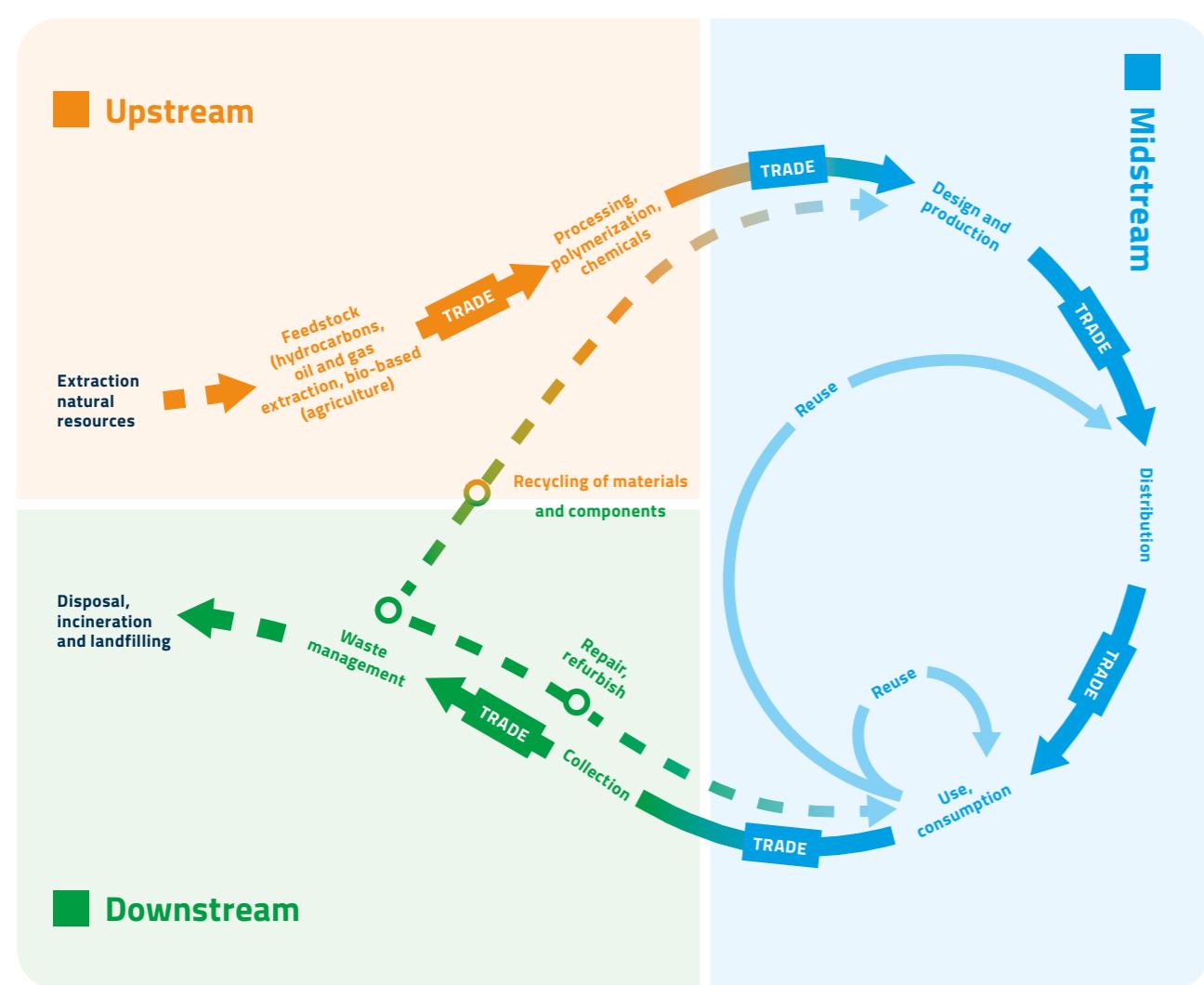
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Conclusion and Proposed Next Steps

Tunisia has taken significant steps to end plastic pollution by developing and starting to implement priority actions of the LISP Strategy. The LISP Strategy will support the implementation of the National Ecological Transition Strategy (particularly Axis 4) and contribute to Pillar III of the Blue Economy Roadmap. By addressing the threat of plastic pollution, the LISP Strategy helps the government unleash the potential of its blue economy. The LISP Strategy aims to support the transition to a circular plastic economy model, which stimulates innovation and creates new jobs. Such a transition, however, needs to be made in an inclusive and equitable manner, considering the needs of the informal waste workers who actively participate in the plastic value chain.

Tunisia needs to continue taking a lifecycle approach to end plastic pollution. The approach considers all activities, from production to disposal, and helps identify the actions needed at different stages of a product's lifecycle. The government plays an important role in incentivizing the reduction of plastics, banning unnecessary plastic products, investing in recycling, promoting research and innovative solutions, and raising awareness among citizens. The implementation mechanism of the LISP Strategy, overseen by the cross-sectoral LISP COPIL, provides a mechanism for the government to work with stakeholders across all sectors to collectively strategize and implement actions in line with a lifecycle approach (Figure 17).

Figure 17: Lifecycle of plastics



Source: UNEP 2023.

To apply a lifecycle approach and achieve the vision of the LISP Strategy, stronger partnerships will be needed. The strategy would benefit from strengthened partnerships between stakeholders, including local government, civil society, and the private sector. For example, the institutional analysis showed that a stronger public-private partnership in waste management is needed to improve plastic waste collection and enhance plastic recycling (Deliverable 1). Civil society can also play a significant role. Tunisia has an active civil society with extensive experience in marine and coastal conservation, education, and awareness-raising. The participation of NGOs in the beach litter survey (Deliverable 3) demonstrated their capacity and potential to support the government's efforts to monitor plastic pollution. Civil society could also work with municipalities to provide locally appropriate solutions. The pilot activities designed for Djerba (Deliverable 2) underscored the opportunities for partnerships between municipalities and civil society to raise awareness and identify locally appropriate alternatives to plastics. The implementation of the LISP Strategy would need the partnership and collaboration of all actors throughout the plastic lifecycle.

As immediate next steps to move towards a circular plastic economy, the government could consider the recommendations that emerged from the priority deliverables. These immediate actions could help the government move towards the long-term vision to conserve marine and coastal ecosystems, while tapping into the socioeconomic potentials of the blue economy. Actions are needed to move the needle towards a resilient, inclusive, and sustainable society.

The following immediate next steps would help Tunisia to advance the implementation of the LISP Strategy:

- Implement the LISP Strategy, starting with priority projects.** The LISP COPIL could start identifying resources to implement the LISP Strategy and its Action Plan so that the strategy can be put into operation.
- Strengthen financial mechanisms for plastic waste management.** The management of the ecotax could be reviewed and adjusted in line with the ongoing discussion on the future EPR models to enhance circularity. The concept of EPR is already under consideration in Tunisia and is clearly included in the draft environmental code, as well as in the National Strategy for the Integrated Management of Household and Similar Waste 2020–2035.
- Optimize the ECO-LEF system.** The government could start optimizing the existing ECO-LEF system by indexing prices to that of virgin resins and ensuring the traceability of flows.
- Strengthen institutional mechanisms for plastic waste management.** A priority partnership program with coastal municipalities, especially in plastic pollution hotspots, could enhance the involvement of local authorities in plastic waste management. Such a program could include testing the selective collection of plastics in partnership with the private sector at household level in selected neighborhoods.
- Invest in plastic waste management.** Stronger public-private partnerships are needed to improve plastic waste management. Tunisia has the potential to improve the recycling of plastics as envisaged in the National Strategy for the Integrated Management of Household and Similar Waste 2020–2035.
- Develop a social plan for informal waste collectors.** A social program to improve health and hygiene conditions for informal workers is needed. Formalization of informal waste collection could also be piloted to assess its feasibility.
- Strengthen plastic pollution monitoring.** The government could establish a national baseline by conducting additional beach surveys using the IMAP methodology. Periodic monitoring could be conducted to assess the status and trends of plastic pollution. This would also help monitor the progress and impact of the LISP Strategy.

- Enhance data management.** An integrated database to manage monitoring and other data related to plastic pollution could be developed based on the existing Open Data system, which is managed by the Ministry of Environment. The roles of each organization involved in monitoring and data flow need to be clearly defined. Developing such an integrated system would help Tunisia prepare for national reporting to the upcoming legally binding instrument on plastic pollution.
- Enhance scientific knowledge on plastic pollution, especially microplastics.** Additional field surveys, especially on microplastics, are recommended to better understand the sources and status of microplastic pollution.
- Execute a communication campaign to encourage stakeholder participation in implementing the LISP Strategy.** The communication plan developed under the partnership with the World Bank aims to enhance the visibility of the LISP Strategy and encourage a broad base of stakeholders to take action. Executing a communication campaign based on the communication plan is recommended.

The government has an opportunity to institutionalize a cross-sectoral program on plastic pollution, based on the LISP Strategy and its Action Plan. The LISP COPIL could serve as a long-term intersectoral coordination mechanism, taking a whole-of-government approach by coordinating across various ministries and institutions to enhance the efficiency of public actions to end plastic pollution. Such a national intersectoral coordination mechanism could also serve as the basis for implementing the future legally binding instrument, as it would seek actions throughout the lifecycle of plastics and involve different sectors and actors throughout the value chain.

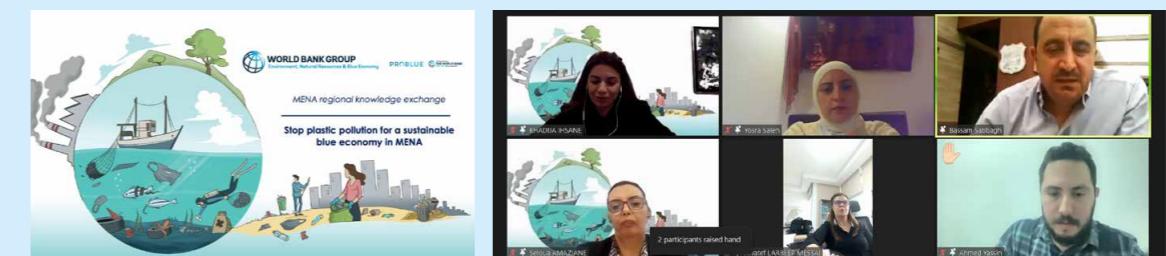
Addressing plastic pollution calls for regional cooperation. No country can address plastic pollution by itself. Regional and international cooperation are crucial for turning the tide. If the business-as-usual model continues, plastic pollution could almost triple by 2040.⁴⁵ To reverse this trend, all actors need to work together. Tunisia has already actively shared its experience with other countries in the region through, for example, a webinar organized by the World Bank (Box 8). Sharing experiences could help accelerate upscaling of solutions fit for the regional context.

Tunisia and the World Bank will continue to work together to end plastic pollution. Building on the momentum created through the partnership with the World Bank, the LISP COPIL will advance the implementation of the LISP Strategy and Action Plan. The World Bank is continuing with its technical support towards the implementation of the LISP Strategy. In this regard, the World Bank is supporting the first progress review of the LISP Strategy to enhance the sustainability of the implementation mechanism. The World Bank will continue partnering with Tunisia to help the country achieve its vision of a coastline that is free from plastics and a sustainable and resilient blue economy.

Box 8: Fostering regional cooperation to stop plastic pollution

A virtual regional workshop, "Stop Plastic Pollution for a Sustainable Blue Economy in MENA", was held on May 8, 2023, to discuss how to address marine plastic pollution as part of a strategy to develop the blue economy and exchange good practices in the MENA region. More than 100 representatives from governments, international and regional organizations, NGOs, academia, and the private sector participated in the workshop. Tunisia shared its experiences in addressing single-use plastics and in formulating its LISP Strategy using participatory approaches.

The key messages that emerged from the workshop were: addressing plastic pollution should be part of the strategy to develop the blue economy; actions should be taken along the entire plastics value chain; and collaboration among all stakeholders is crucial to end plastic pollution. The importance of regional and international cooperation to end plastic pollution was also highlighted.



⁴⁵ Lau et al. 2020.

Annexure



Annexure 1: Sampling protocols for marine litter and microplastics

Two protocols were used for the survey in Deliverable 3:

- The sampling protocol used for marine litter (macrolitter) was that of the Integrated Monitoring and Assessment Program, as explained in UNEP's Integrated Monitoring and Assessment Guidance.⁴⁶
- The sampling protocol used for microplastics was that of the International Rocha Conservation and Hope association, based on the recommendations of the European Commission's 2013 report, "Guidance on Monitoring of Marine Litter in European Seas".⁴⁷

Macrolitter

The sampling protocol for macro-litter on beaches was as follows:

- Before arriving on site, the team informs the municipality of the forthcoming survey and requests that the beach is not cleaned at least five days before the start of the survey, so as not to bias the results. If the beach is cleaned before the start of the survey, fewer items could be found than the usual level of pollution on the beach, which could lead to incorrect results.
- On arrival at the site, the survey team uses their vehicle to get as close as possible to a GPS-tagged point and covers the rest of the distance on foot. Safety is the primary consideration, and if the GPS-tagged point is not safely accessible (for example, if a tagged location is at the foot of a cliff), the survey team must choose an alternative site as close as reasonably and safely possible to the original GPS tagged location.
- Upon arrival at the GPS tagged location, a member of the survey team determines the location of the start of the 100-meter transect. To ensure reproducibility of the survey, and to ensure that future sampling takes place along the same transect, the start of the transect must coincide with a notable natural feature such as a tree, building, or rock. This first transect must be at least 50 meters from the beach access point.
- Each site is sampled at a 100-meter transect. If the beach has different habitat types (for example, a sandy area, a rocky area, and a vegetated area), the transect can be divided into smaller segments to be sampled (e.g. 5 x 20 meters), to avoid any selection bias (for example, "there's a lot of visible garbage here, so let's sample here"). At each transect, GPS positions should be noted and photos taken at the bottom and top of the transect (for future reference and as a memory aid when analyzing the data).
- The end of the transect is marked by the main surveyor, using a tape measure laid out in a straight line along the water's edge. Laterally, the transect ends on the dominant vegetation line at the top of the beach, to capture any detritus trapped in the vegetation. Surveyors should avoid walking on the transect before surveying it, as they risk trampling or burying existing garbage.
- To sample the transect, the surveyors stand shoulder-to-shoulder, from the water's edge to the back of the beach, and walk slowly up the transect, carefully observing the beach for detritus. Each surveyor collects garbage over a width of 2 to 4 meters in front of him or her. If the beach is too wide or too polluted for the number of surveyors, they will move in a zigzag pattern to cover as much of the beach as possible. Only items that are visible from a standing position should be recorded.

⁴⁶ UNEP 2016.

⁴⁷ International Rocha Conservation and Hope 2018.

Figure 18: How macrolitter is sampled



Source: World Bank.

- Each surveyor holds a bag and collects all items with recognizable marks that could reasonably be the subject of a brand audit, as well as all unidentifiable items, as long as their collection does not significantly slow down the survey. The aim is to carry out a brand audit on all items bearing recognizable marks, and to collect as much waste as possible during the transect survey. For example, a group of several dozen small pieces of unidentifiable waste may not be collected by the surveyor if it is felt this would slow the process down considerably. This is a compromise between the ethical desire to collect as much waste as possible and the practical need to stick with the survey schedule.
- Once beach sampling is complete, all identifiable beach items will be sorted, categorized, counted, and weighed, before being safely disposed of.
- If the selected transect reports no waste, additional transects will be selected at 50-meter intervals from the first transect, up to a maximum of six transects or until a single piece of waste is found. The aim is to reduce the risk of false negatives, on other words, reporting the absence of waste at a site when in fact the transects were "unlucky" and reported no waste.
- If a transect contains a huge amount of waste, a subsample may be justified. To do this, surveyors decide on a subsection (in other words 50 percent, 25 percent, or 10 percent of the beach) to be sampled and then extrapolate from there. This method should only be used for extremely polluted beaches, again to avoid lengthening the survey time.

Microplastics

The sampling protocol for microplastics on a beach is as follows:

- When sampling for macrolitter on a beach using the protocol described above, the lead surveyor marks three 50 centimeter (cm) x 50 cm sampling units along a vertical transect running from the water's edge to the back of the beach. The sampling unit is marked with a measuring tape and the GPS coordinates of each unit are recorded. One unit is located in the low tide zone, another in the accumulation zone, and the last in the high tide accumulation zone. Three transects are sampled for microplastics.
- For each unit, the top 3 cm to 5 cm of sediment is removed using a metal shovel or similar tool, and placed in metal buckets.
- Microplastics with diameters of between 1 millimeter (mm) and 5 mm are separated by sieves. A 5 mm mesh sieve and a 1 mm mesh sieve are used to reduce sample volume. All non-plastic elements are removed.
- Microplastics and other elements remaining on the 1 mm sieve are transferred to a glass jar, to be sorted in a closed area at a later date.
- By mixing in salt water (a large spoonful for a liter of water), the microplastics will float, and can be separated by flotation.



Takelsa Beach, Nabeul Governorate, Tunisia
Source: K.Ladjimi, shutterstock.com

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