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Executive summary

Analysis of the French mobile phone market and stock. Recommendations for a sustainable increase of collection rate.

Final report

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Executive summary

Context and approach

After more than 6 months of public consultation and collaborative work, the Prime Minister released the Circular Economy Roadmap (FREC) in April 2018. Of the 50 measures proposed by the FREC, measure 31 is aimed in particular at the mobile phone sector, by proposing *to study (...) the deployment of a financial mechanism to promote the take-back of old mobile phones*. In December of the same year, the Ministry of Ecological and Solidarity Transition (MTES) sent a letter to the recycling schemes (so-called eco-organisms) Ecologic and ESR, asking them to lead the implementation of a study on such a financial mechanism, ensuring that all stakeholders in the sector get involved.

In parallel, a Senate report published in 2016 argues that *100 million phones "sleep" in the drawers of our fellow citizens and that only about 15% of available mobile phones are collected*, while an ADEME study from the same year states that *31% of smartphone owners who have renewed their mobile phones have opted for a resale or take-back scheme*.

Both figures circulating and the terminology used in the various sources indicate a certain confusion and a lack of knowledge within the ecosystem.

It is in this context that eco-organisms, with the support of the Alliance Française des Industries du Numérique (AFNUM), are undertaking to bring together the most important stakeholders representing the majority of the mobile phone ecosystem in December 2018, in order to co-fund and define the terms of reference for a study aimed at:

- bringing stakeholders together in a collaborative and participatory process
- filling a clear gap in both qualitative and quantitative knowledge
- identifying and proposing levers for action to achieve the objectives described in measure 31 of the FREC

Following a competitive bidding process, Sofies International (Sofies) and Bio Innovation Service (BIOS) were selected to organize the stakeholders and carry out the study with its conclusions being presented in a technical report.

Stakeholder organisation

The first step was to identify the main actors in the telco ecosystem and invite them to a workshop to determine their interest in participating in this study and their desired level of involvement. From these initial exchanges, the following two entities were created:

- A steering committee, responsible for financing the study, selecting the service provider and ensuring the strategic orientation of the research. This committee has decision-making authority.
- An advisory committee, representing all stakeholder colleges, and composed of major ecosystem stakeholders interested in monitoring progress and wishing to actively contribute to the study.

The graph below shows the organizations involved in each of these two committees.
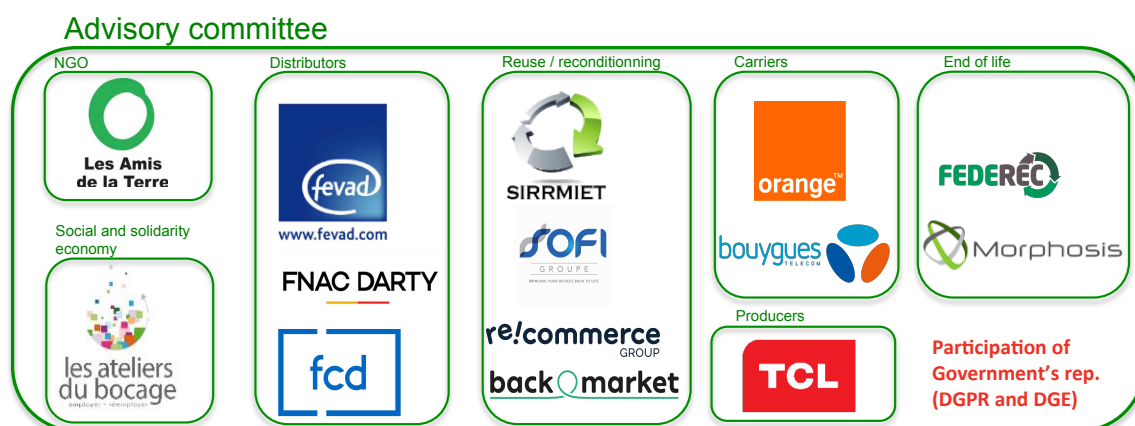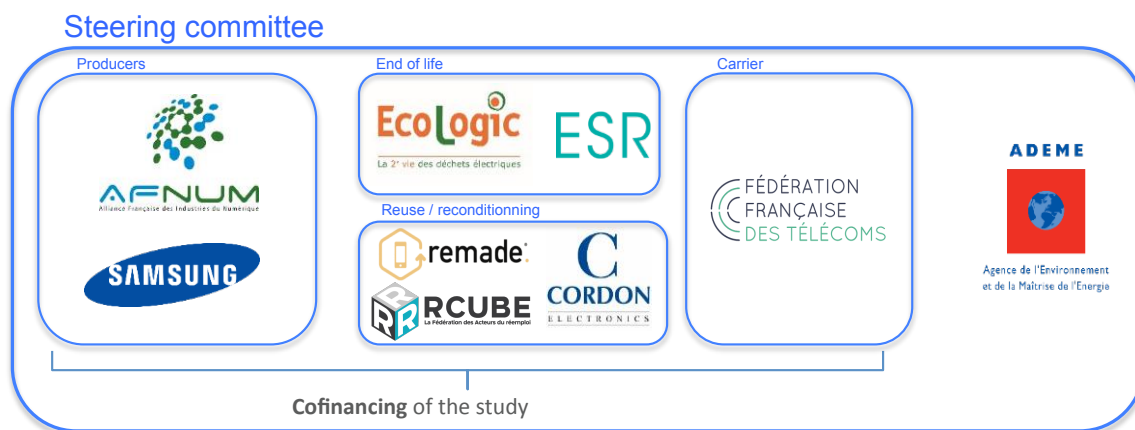
In general, the dynamics of the actors involved were central to the development of this study, both through regular monitoring of the organizations involved and through their active participation in the production of results, whether during ideation sessions, revision of intermediate results or by providing data.

Closing the knowledge gap

The knowledge gap within the telco industry has been filled through the construction of a detailed flow model.

The model was developed in two stages:

The **inventory phase** aimed, initially, at collecting all the available information in order to define the scope and limits of the model and to conduct an initial contextual analysis. This work has made it possible to:

- Establish the mapping of mobile phone flows and stakeholders, identify key stakeholders, and propose a first version of the model in the form of a flow diagram.
- Conduct an analysis of the regulatory framework, and its impact on the terminology used in the sector.
- Identify international best (and worst) practices and compare France to other OECD countries as part of a benchmark analysis. This part of the study was the subject of a specific report communicated to the authorities in early May 2019.
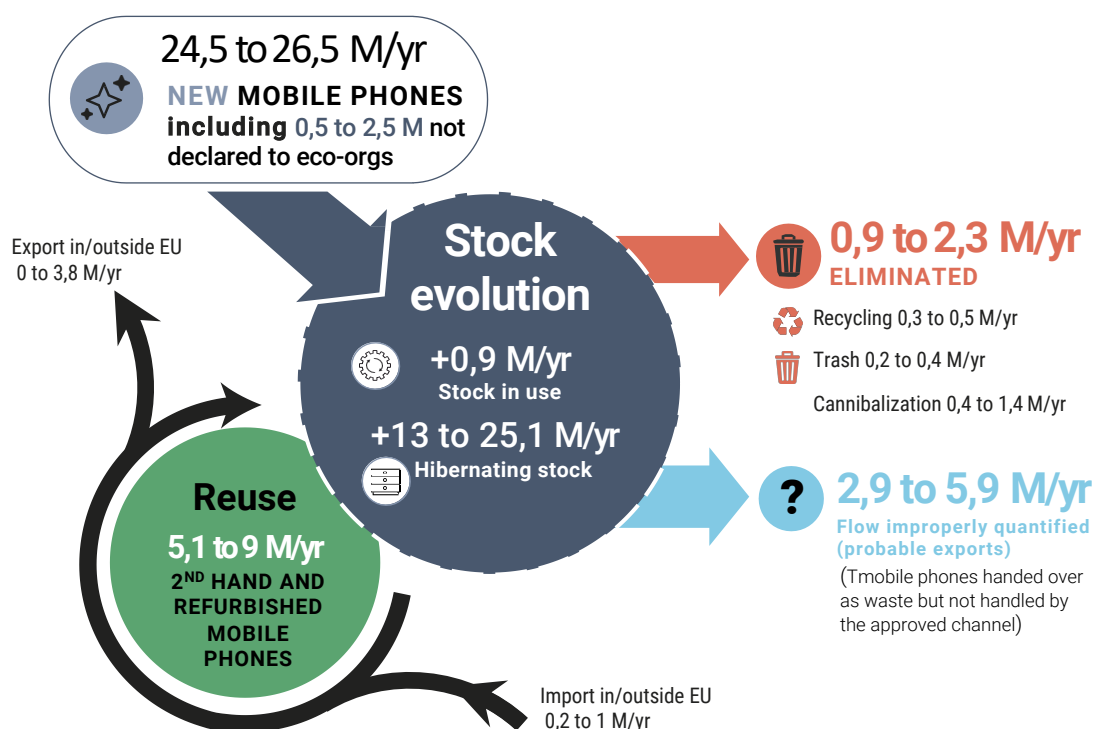
Then, the **investigation phase** was conducted thanks to a direct engagement of the ecosystem stakeholders, in order to:

- Consolidate the first version of the model developed during the inventory phase for validation.
- Collect market data from the different stakeholders, according to a "black box" methodology enabling the publication of consolidated and anonymized data.
- Conduct a survey of 1,000 consumers to improve our knowledge of consumer habits and further refine the quantitative model when it comes to the number of mobile phone hibernating.

The combination of the results of the inventory and survey phases made it possible to develop a detailed flow model, on the basis of which quantified indicators could be produced on the one hand, and a qualitative analysis of the French mobile phone ecosystem on the other hand. As this is the first construction of such a detailed and dynamic model for mobile telephony in France it still involves a number of uncertainties that are detailed in the study. Future updates of the model will make the data more reliable and accurate.

The following quantitative observations can be made on the basis of the model thus developed:

- Between 24 and 26 million new mobile phones are put on the market each year.
- 5 to 9 million mobile phones are reused each year through exchanges between individuals or through professionals of the reuse ecosystem.
- Mobile phone owners dispose of 4 to 8 million devices annually, less than half a million of which being managed through the approved end-of-life channel.
- The hibernating stock is potentially increasing significantly annually (from 13 to 25 million).

24,5 to 26,5 M/yr
NEW MOBILE PHONES
including 0,5 to 2,5 M not
declared to eco-orgs

Export in/outside EU
0 to 3,8 M/yr

Stock evolution

+0,9 M/yr
Stock in use

+13 to 25,1 M/yr
Hibernating stock

0,9 to 2,3 M/yr
ELIMINATED

Recycling 0,3 to 0,5 M/yr

Trash 0,2 to 0,4 M/yr

Cannibalization 0,4 to 1,4 M/yr

? 2,9 to 5,9 M/yr
Flow improperly quantified
(probable exports)
(mobile phones handed over
as waste but not handled by
the approved channel)

Reuse

5,1 to 9 M/yr
2ND HAND AND REFURBISHED MOBILE PHONES

Import in/outside EU
0,2 to 1 M/yr

Overview of the estimated flows and stocks of mobile phones in France in 2018.

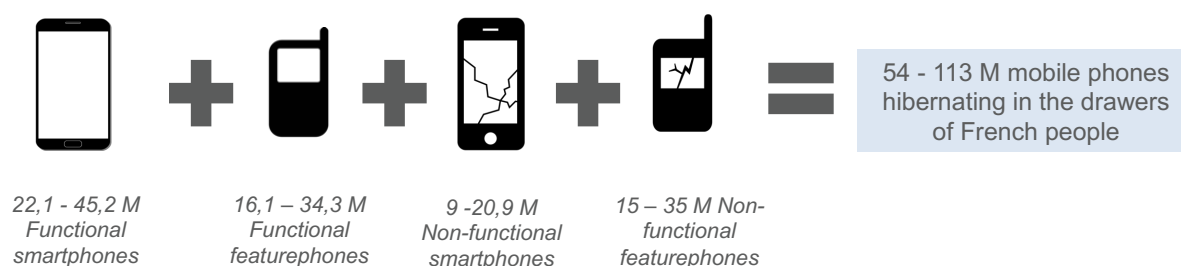The detailed model is presented in Chapter 3.3.

Main findings

The following main findings were produced on the basis of the flow model, the analysis of the regulatory and financial context, and through the various consultations and working sessions with stakeholders:

1. The hibernating stock constitutes an important source of mobile phones to be recovered for both reuse and recycling. This stock, estimated at between 54 and 113 million devices,[1] is composed of more than two thirds of devices that are still functional. Two out of three French people report having mobile phones in their drawers that they keep mainly for the future (as an alternative, for themselves or their loved ones). Alternatively, non-functional devices are concentrated in about one in five people and are kept mainly because of lack of practical access to or knowledge of the recycling process, but also to protect their personal data and be-

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[1] According to the OpinionWay survey of 1,008 French adults conducted as part of this study. The survey does not make it possible to distinguish unambiguously whether the mobile phones indicated in hibernation belong to a household or a person, which explains among other factors such a large confidence gap.

cause the small size of the phones makes them easy to "forget". The reuse potential and associated market value of this hibernating stock on the second-hand market is therefore very variable and difficult to estimate.

Composition of the park in hibernation according to OpinionWay survey.

22,1 - 45,2 M	16,1 – 34,3 M	9 -20,9 M	15 – 35 M Non-	54 - 113 M mobile phones
Functional	*Functional*	*Non-functional*	*functional*	hibernating in the drawers
smartphones	*featurephones*	*smartphones*	*featurephones*	of French people

Composition of the park in hibernation according to OpinionWay survey.[2]

2. In general, **the sector is not well structured** in its collection and retake efforts, particularly on low-value or non-functional phones. The coordination, efficiency and financial resources allocated have the potential to optimize and better structure the sector. In other words, there are a multitude of initiatives to collect or take back old mobile phones, which are either the result of efforts to collect WEEE as a whole or the result of actions by isolated stakeholders. A coordination of these different actions and a structuring of the actors make it possible to pool efforts, economies of scale and a gain in efficiency.

3. The **regulatory framework is challenged** by an ecosystem that has evolved significantly in recent years, with the emergence of online marketplaces, the second-hand market and the reuse sector. On the one hand, this creates a number of challenges for authorities, such as ensuring the control of imported telephone flows via marketplaces or ensuring compliance with WEEE regulations. On the other hand, terminology is not harmonised between ecosystem stakeholders, with differences in interpretation between use and regulatory definitions, or the use of terms that are not yet regulated, thus leading to confusion and dilution of responsibilities.

4. The **traceability of cross-border movements is difficult** to assess precisely, so that many import and export flows remain difficult to quantify and qualify. This is the case for flows of mobile phones imported and distributed through marketplaces, but also for flows exported by the reuse sector or by individuals. Beyond the regulatory challenges described in the previous point, the difficulty in tracing these international movements lead to a significant margin of error when mapping the ecosystem, which will require more detailed studies in the future.

5. The **end-of-life collection of mobile phones remains unsatisfactory**. Indeed, the collection targets for eco-organisms are set by weight per stream, and in this context mobile phones contribute relatively little given their low weight to achieving these targets for the

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[2] By "featurephone" we mean basic phones that do not manage data.

mixed small household appliances category (so-called Petits Appareils en Mélange) in which they are included. In addition, consumers attach particular economic and emotional value to their old phones compared to other types of WEEE and make it easy to store and forget them in a drawer.

6. There is some **confusion among consumers**, who are unfamiliar with the options of reuse and waste recovery available to them and the value that their old phone can still have on the second-hand market. On the one hand, consumers reported in the OpinionWay study a significant number of mobiles phones sent for "recycling", in proportions that do not correspond to the statistics provided by eco-organisms, so we can conclude that the distinction between collection for recycling and recovery for re-use remains unclear. On the other hand, consumers highlight price and warranty as key factors in choosing a second or third hand phone, while few are able to name stakeholders offering such guarantees.

7. The professional reuse sector suffers from competition in unequal or even unfair fiscal framework conditions, particularly with the second-hand market and the grey market facilitated by the emergence of marketplaces. The analysis of financial flows showed that for approximately similar turnover for these three markets - in the hundreds of millions of euros per year - only the professional reuse sector contributed to VAT at a rate of 30 to 70 million euros per year, making it even less economically attractive to consumers, whereas it provides a number of quality guarantees - and therefore generates costs - to consumers and creates employment in France.

8. The benchmark study showed that **there is no single solution to address the collection challenge, but rather a combination of operational measures**, which require the implementation of structural measures. In reality, there is no systematic approach targeting the collection and take-back of old mobile phones, and instead a multitude of ad hoc initiatives have been identified that generate ad hoc results with varying degrees of success. Deposit systems in particular appeared to be cumbersome to set up for inconclusive effects in terms of collection and did not address the problem of the hibernating stock in the drawers.

9. In this context, France is a comparing well to other countries, particularly in the reuse sector, and is clearly a pioneer in organizing stakeholders. Collection rates for recycling are comparable to those of other European countries, while recovery rates for reuse are generally higher. In particular, the professional reuse sector is fairly well developed in France where industrial leaders have emerged. Finally, the stakeholders organization involved in this study is unique and has not been identified elsewhere.

Proposed drivers for action

On the basis of these findings, the priorities for action to increase collection and retake must therefore focus on:

- Enabling users so that he can confidently dispense of their mobile phones through the right collection or retake channels for reuse or recycling.
- Avoid adding to the stock in hibernation.
- Take advantage of the stock of mobile phones stored in drawers.

In order to measure the actual reuse and recycling of mobile phones in France and not only the collection of waste, we propose in this study a new indicator metric called the circularity rate. The latter measures the proportion of mobile phones and related materials returned to the mobile phone ecosystem after first use. It is calculated as the sum of phones sold from retake and refurbishing (from waste), donated phones, second-hand phones sold from private individual to private
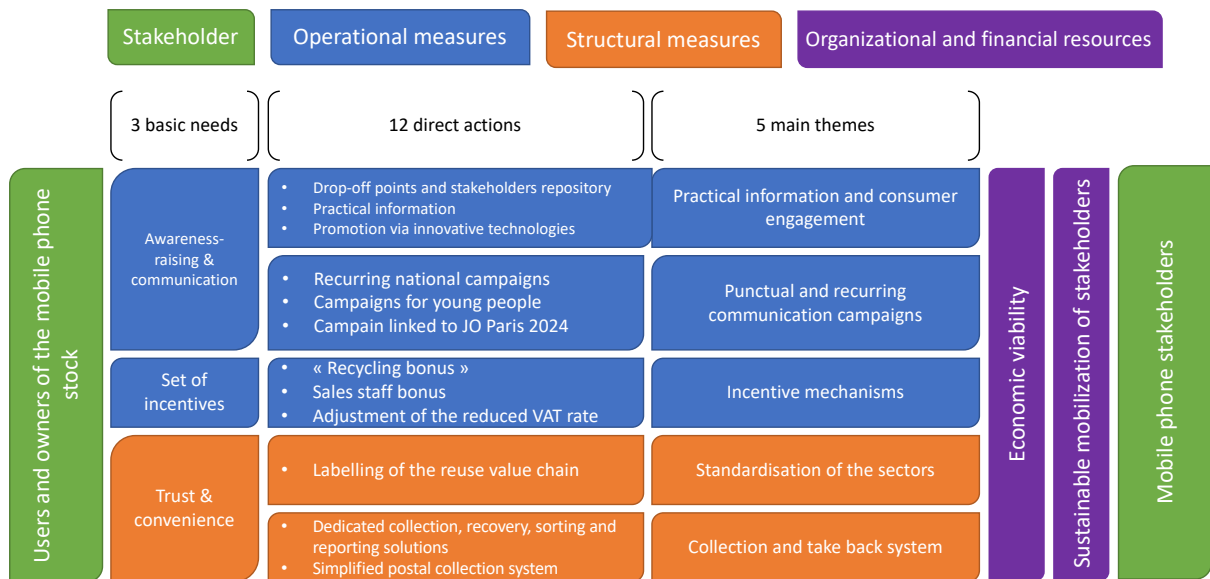
individual and recycled phones, divided by the average quantity of mobile phones placed on the market in the previous three years.[3] Whereas the rate of collection by eco-organisms is estimated at 1-2% and the rate of retake is estimated at 23-34%, the circularity rate in France is estimated today at 22-40%.

The drivers for action proposed herein to increase the circularity rate of mobile phones were identified and evaluated according to a methodology based on the following steps:

- First, an ideation process made it possible to identify up to 31 measures through the international benchmark study on the one hand, and through a direct contribution from the sector's stakeholders on the other.
- Then, the measures were qualified by describing their implications, as well as drivers and obstacles to their implementation.
- Finally, the measures were evaluated according to a multi-criteria approach by evaluating 4 aspects: an assessment of the estimated impact on collection and recovery rates, the time required to achieve the desired impact, an estimation of the order of magnitude of their cost, and an assessment of their implementation complexity. This multi-criteria evaluation approach highlighted 12 high-potential measures out of the 31 identified. Those are detailed in the present study.

This process made it possible to establish a number of strategic axes proposed here as a result of the study as a response to the MTES request, to measure 31 of the FREC, and presented in the diagram below.

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[3] on the French market

Stakeholder	Operational measures	Structural measures	Organizational and financial resources

3 basic needs — **12 direct actions** — **5 main themes**

Users and owners of the mobile phone stock	Awareness-raising & communication	• Drop-off points and stakeholders repository • Practical information • Promotion via innovative technologies	Practical information and consumer engagement	Economic viability	Sustainable mobilization of stakeholders	Mobile phone stakeholders
		• Recurring national campaigns • Campaigns for young people • Campain linked to JO Paris 2024	Punctual and recurring communication campaigns			
	Set of incentives	• « Recycling bonus » • Sales staff bonus • Adjustment of the reduced VAT rate	Incentive mechanisms			
	Trust & convenience	• Labelling of the reuse value chain	Standardisation of the sectors			
		• Dedicated collection, recovery, sorting and reporting solutions • Simplified postal collection system	Collection and take back system			

- First, it is necessary to **develop a value proposition focused on users** based on clear and attractive communication, including incentive mechanisms, and based on an adapted and accessible collection system in which they can have confidence.
- To formulate such an offer, **a combination of operational and structural measures** must be implemented in a systemic way. The main objectives of the operational measures are to ensure that practical information is available to engage users in the process, that communication campaigns are put in place, and that a range of incentive mechanisms are proposed. Structural measures on the other hand should serve to increase confidence in the system through standardization of the supply chain, and to offer maximum convenience by developing a collection and recovery system dedicated to mobile phones with no or very low value on the second-hand market in particular. **The objective of all these measures would be to collect or take back between 6 and 12 million additional phones per year.**
- The implementation of these measures requires organisational and financial resources to ensure their sustainability. On the one hand, we propose to perpetuate the collaborative stakeholder organisation initiated within the framework of this study by creating a platform in the form of an Observatory. This multi-stakeholder approach is central to ensuring consensual governance and would provide a channel of communication with the authorities to ensure the proper application of the regulation (control of flows of used products at borders, compliance with VAT taxation). On the other hand, a viable option identified to ensure the economic viability of the deployment of the proposed measures would be a proportionate increase in the eco-contribution in combination with other financing sources depending on the nature and scope of each measure. As the measures vary widely in scope and means necessary for their implementation, their estimated cost in relation to the number of new mobile phones placed on the market each year would vary between 0.0004 and 0.34 €/year per unit.

The measures and strategy presented herein are the result of a qualitative analysis based on the information available or provided by the sector stakeholders. **Their deployment will in any case require a more detailed technical and economic feasibility studies** in order to determine pre-

cisely the technical and financial means necessary for their implementation and to assess the extent of the positive impacts that could be generated.

However, we believe that the implementation of the 12 measures with the highest potential for positive impacts would significantly increase the collection and take-back rates of mobile phones after their first use, and effectively take advantage of the stock in hibernation including the 24 to 55 million non-functional and low market value devices that are still functional. This would directly contribute to the objectives of the circular economy by extending the life of products through reuse, and by preserving valuable natural resources through recycling all the while creating jobs in France.