A systemic approach to resource efficiency policies

A case study from the metal industry in Argentina

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IKI INTERNATIONAL CLIMATE INITIATIVE

Using our planet's resources efficiently

The UN Environment International Resource Panel (IRP) has found that the global extraction and processing of natural resources such as metals, biomass and minerals accounts for almost one quarter of all greenhouse gas emissions. This contributes significantly to climate change and other environmental challenges including water scarcity and biodiversity loss. Using energy and raw materials more sustainably and efficiently offers both environmental and economic benefits. So far, these potentials remain largely untapped.

While the benefits of resource efficiency are increasingly recognised in national policies and international agreements – with many governments setting ambitious greenhouse gas reduction targets – action is now needed in order to achieve those targets.

Policymakers have to ask themselves a number of questions: To what extent does resource use contribute to climate change? What resource efficiency tools are available? Which strategies – from recycling to substitution – can be applied to which resources? And what are the potential savings?

What does material consumption have to do with climate change?

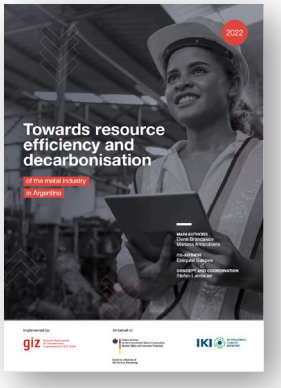
The extraction and processing of materials accounts for 23% of greenhouse gas emissions. This contributes significantly to climate change.

These emissions can be reduced by using materials more efficiently. Material efficiency is a term from economics that describes the ratio of materials used (input) to products obtained (output). Potential material efficiency strategies include:

- **Recycling**
- **Optimised design and production**
- **Extended life and reuse of materials**
- **Substitution with materials with a lower carbon footprint.**

Through the global Initiative for Resource Efficiency and Climate Action (IREK II), the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH contributes to policymaking aimed at decarbonising industry and implementing resource efficiency strategies.

One of the results of the initative was the study **'Towards resource efficiency and decarbonisation in the Argentinian metal industry'**.



*Click **here** to download the study.*

'In Argentina, we worked with local experts on the study 'Towards resource efficiency and decarbonisation in the Argentinian metal industry'. We used five principles to decide which instruments were the most promising in terms of the relative costs and benefits. From the beginning, we brought together a wide range of stakeholders, including ministries, chambers of industry and institutes for standardisation. Ultimately, we identified nine instruments that were economically attractive for companies, while also contributing to climate change mitigation.

The Argentine Government is now planning to include these instruments in its climate strategy. We hope that the five principles described and the three-phase model can serve as a blueprint for other industrial sectors, countries and actors operating in the climate space.'

Stefan Landauer

Initiative Resource Efficiency and Climate Action
Division Climate Change, Environment & Infrastructure

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For the development of the study, we used five action principles across three phases to define the suggested resource efficiency instruments in the Argentinian metal processing industry.

We will describe these on the following pages, as they can be applied to any national policy instrument that increases resource efficiency and mitigates greenhouse gas emissions.

'The report can serve as a model for developing climate instruments in a participatory manner and integrating them into national climate plans. Because the lessons can be applied to other industrial sectors in other countries, the study is a blueprint for policymakers around the world. Each of the options is engagingly written and framed around the imperatives of impact, action, urgency, climate relevance and integration into national climate plans, making the study a must-read for climate decision-makers and consultants alike.

The report is also important for developing countries with large metal industries in charting out their Nationally Determined Contributions (NDCs) under the Paris Agreement on Climate Change. The IRP looks forward to working with UN member states in furthering these goals through such science-based products to expedite policy action on climate change mitigation.'

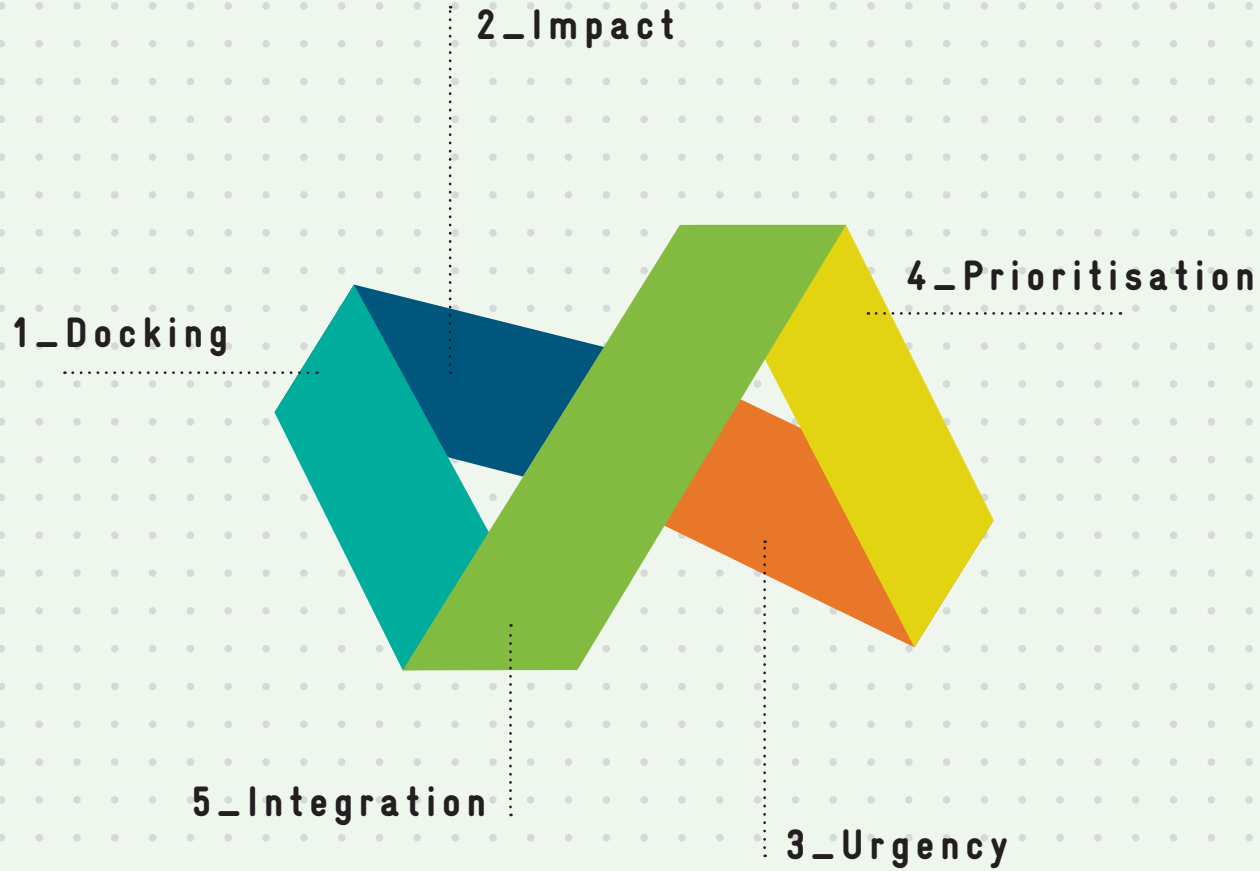
Professor Saleem H. Ali

International Resource Panel, United Nations Environment Programme

Blue and Gold Distinguished Professor of Geography and Spatial Science, University of Delaware

FIVE GUIDING PRINCIPLES

1_Docking
2_Impact
3_Urgency
4_Prioritisation
5_Integration



1_Docking

Any new policy instrument operates within a complex national and international policy and research framework. We used a systemic approach to establish how the proposed instruments would fit into the policy and research landscape. Every step of the way, we asked ourselves: What existing frameworks are we operating in? When and how should the instrument be used and take effect in the national climate planning process? Who is affected? Which political partners, institutes, teaching institutions, industrial sectors and associations are involved? Do we need to approach them, and if so, how?

We called this approach to research and development "docking" – an intentional way of navigating the existing landscape and providing stability to everyone involved.

In our study

We developed instruments that could be integrated into Argentinian climate plans such as the 2018 National Action Plan for Industry and Climate Change, the 2022 National Climate Change Adaptation and Mitigation Plan and the emission reduction commitments adopted in 2021.

It was important to know where the instruments connected up with these and which stakeholders to include. We involved a broad range of political partners, institutes of standardisation, university faculties, industry leaders and associations early on. In particular, we worked with ADIMRA – the umbrella organisation of the Argentine metal industry – and the Argentine Ministry of Economy.

2_Impact

While docking is an important first step, it is vital to be clear about the potential effects of the instruments. We categorized these according to the three classic impact levels:

- **Outputs** are services, activities or products, in our case the resource efficiency instruments.
- **Outcomes** are the reactions of the target group, in our case the people and organisations involved in integrating the resource efficiency instruments into national climate plans.
- **Long-term effects** describe in our case the reductions in greenhouse gases associated with implementing the resource efficiency instruments.

In our study

By calculating impacts and estimating how many tonnes of CO_2 would be saved by implementing the instruments, we know what the study can achieve as a whole.

One example is the 'Reduction of metal in trailers and semi-trailers' instrument (output). If included in the 2023 National Sector Plan for Sustainable Industry and implemented by the metal sector (outcome), it will lead to a reduction of 9,570 tCO_2 per year (long-term effect).

3_Urgency

We need urgent action to combat climate change and its impacts. Climate scientists in the Intergovernmental Panel on Climate Change (IPCC) warn that in order to stay within 1.5 degrees of warming, global CO_2 emissions must fall by 65% by 2035 (compared to emissions in 2019).

The United Nations and governments around the world have committed to limiting greenhouse gas emissions. They understand that time is running out to take action. In our study, we prioritised instruments that could be implemented quickly.

In our study

Argentina has set ambitious national targets to limit emissions to 349 $MtCO_2$ by 2030 and achieve climate neutrality by 2050. We therefore evaluated the proposed instruments in terms of how quickly they could be implemented, the reaction time of the target groups, and when long-term impacts could be expected.

One example is the law no. 26348 that sets out the need for scrapping abandoned, lost, seized and impounded vehicles. According to the Argentine Ministry of Security, in 2018 there were over two million vehicles in a suitable condition to be crushed and used as scrap. In our study, we suggest to extend this legislation to the provinces, so as to harmonise local legislation with national law. By using materials more than once, we will reduce the CO_2 emissions caused by the extraction and processing of resources.

4_Prioritisation

When developing new policy instruments, it is easy to get lost in the details and be tempted to include everything that might seem relevant. This means proposals can be too wide-ranging – and less impactful as a result.

We need to be bold: less promising instruments should be discarded and the best ones prioritised. A clear and transparent way to prioritise options for action is to develop evaluation criteria.

In our study

We developed evaluation criteria to help us set priorities. These included CO_2 reduction potentials; financial, technical and legal hurdles; and the speed of implementation of the suggested instruments.

We asked ourselves: Is this sector relevant for our study? Which potential instruments have the greatest impact? Which can be implemented the quickest? The criteria had different weightings based on their relative importance. Each instrument received a score reflecting its potential impact. This made it straightforward to select the instruments based on their greatest potential impact.

One example is the development of a new IRAM[1] technical standard to class spent foundry sand as a secondary raw material suitable for other production chains, such as asphalt and concrete. Compared to the extraction and processing of virgin sand, the use of spent foundry sand could result in a reduction of 7,200 - 10,800 t/year of CO_2[2].

[1] *Instituto Argentino de Normalización y Certificación*

[2] *Calculation based on Argentina's Fourth Biennial Update Report to the United Nations Framework Convention on Climate Change*

5_Integration

Generally speaking, the more diverse a group is, the wider the range of skills that are brought to the table. Open and honest discussions about resource efficiency among a broad spectrum of stakeholders enable the group to work through their differences and address divergent viewpoints.

This means that the group is able to arrive at better decisions that are more likely to be accepted and identify instruments that are politically and economically viable.

In our study

We created groups that included representatives from ADIMRA (the umbrella organisation of the Argentine metal industry), the Argentine Ministry of Economy and other institutions. They were able to work together to develop viable instruments that would be seen as legitimate by a wide range of stakeholders.

The consensus-based approach to decision-making had a transformative effect on the group. The focus was less on voting and more on finding solutions that met with the least resistance across the group. It was not necessary for all group members to agree on every decision, but overall everyone's views were taken into account. Thus, even where consensus was not possible, the group was able to arrive at positive solutions.

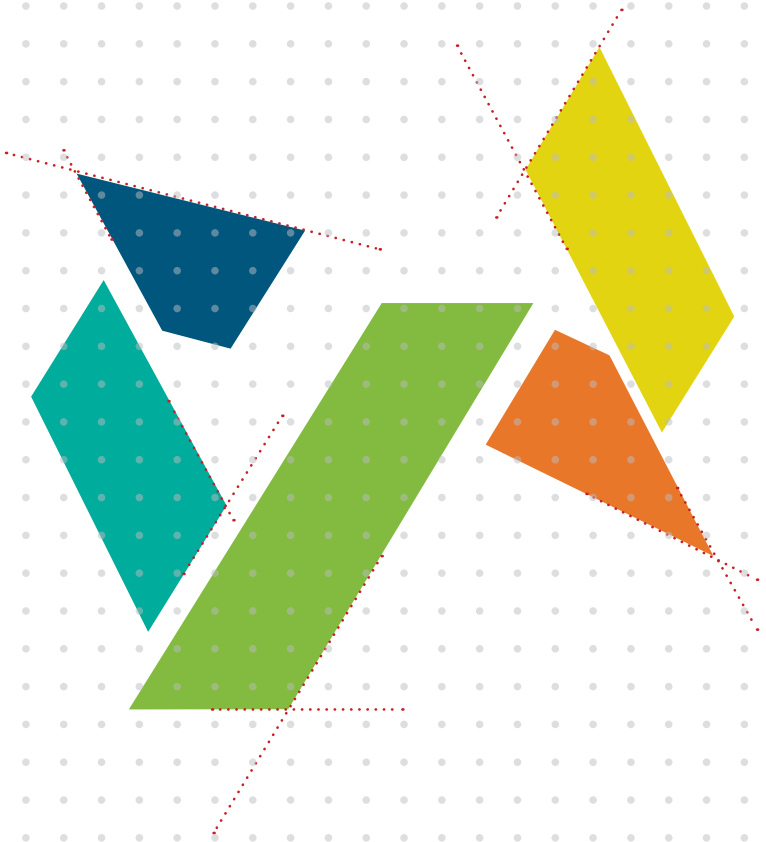
THE STUDY PROCESS

I_Scoping phase

II_Design phase

III_Dissemination & anchoring

I_Scoping phase



What exactly do we want to achieve? What is the timeframe? Which areas of the economy are the biggest emitters of greenhouse gas emissions? Which sectors can we apply resource efficiency strategies in? Who are the stakeholders that we need to involve from the beginning for successful uptake and implementation?

These are the kinds of questions we asked in the scoping phase of our study. We explored the context, tasks, goals, partners, approach and system boundaries. Guided by the principles described in chapter I, we identified the metal processing industry as a relevant industrial sector, as it emits four million tonnes of CO_2 per year.

We decided to focus on material efficiency, and approached potential partners: the Argentinian Ministry of the Environment as the political partner, and the Argentinian umbrella organisation of the metal industry (ADIMRA), which represents the relevant chambers of industry and private firms. With regard to national climate planning, the National Sector Plan for Sustainable Industry was identified as the docking point.

II_Design phase

In the next phase, we collected ideas for potential resource efficiency strategies and instruments. We evaluated these in terms of costs, risks, barriers and impact. We asked ourselves: Which of the strategies – such as recycling or optimised design – could work in the context and would be supported at political level? Rather than advocating for specific approaches, we discussed this question with all stakeholders. This led to the generation of a wide range of ideas.

After this initial survey, a longlist of potential instruments was evaluated and prioritised in terms of costs, risks, barriers, feasibility, and potential impact (especially regarding CO_2 reductions). Instruments that offered significant benefits, climate impacts and quick implementation times received the highest scores. Based on the scores, we created a shortlist of the most promising instruments.

We then worked with the most important business associations, standards institutes and ministries to evaluate the instruments. The early involvement of these actors was vital for the feasibility and acceptance of the instruments. Together, we chose nine instruments with the greatest potential for savings, best cost-benefit ratio and shortest implementation time.

III_Dissemination & anchoring

Finally, we disseminated the results of the study with the aim of anchoring them in national climate plans.

We consulted our partners – the Argentinian umbrella organisation of the metal industry and the Ministry of Economy – who had been involved in the process from the start, in keeping with the principles of docking and integration. These partners communicated the instruments to the National Climate Cabinet, which is responsible for drawing up the sector plan.

This allowed for a smooth incorporation of the study results into national climate plans.

Conclusion

The five principles described in this publication guided us in developing the resource efficiency instruments for the Argentinian metal processing industry. The three-phased model gave us a clear structure for planning, implementing and monitoring the project. We hope that this publication proves useful for readers who want to develop their own national policy instruments to increase resource efficiency and mitigate greenhouse gas emissions.

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