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Study 2: The more effective governance of energy efficiency policies

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Agenda



1. Introduction
2. Concepts of "effective governance" and analysis of existing policies and governance structures in Japan & Germany/EU
3. Effective policy packages for the industry sector
4. Policy recommendations Energy Efficiency
5. Policy recommendations Energy Efficiency in the industry sector

1. Introduction



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2. Concept of "effective governance"



Effective governance

= governance that ensures the achievement of decided targets for energy efficiency in time

Elements needed for effective governance

1. **Goal Setting** , Setting clear and possibly binding targets - Increase Communication
2. **Clear definition of roles, authorities and responsibilities of stakeholders**
3. **Funding** , transparent financial governance
4. **Useful for goal monitoring** , insight, feedback, and problem identification
5. **policy evaluation**

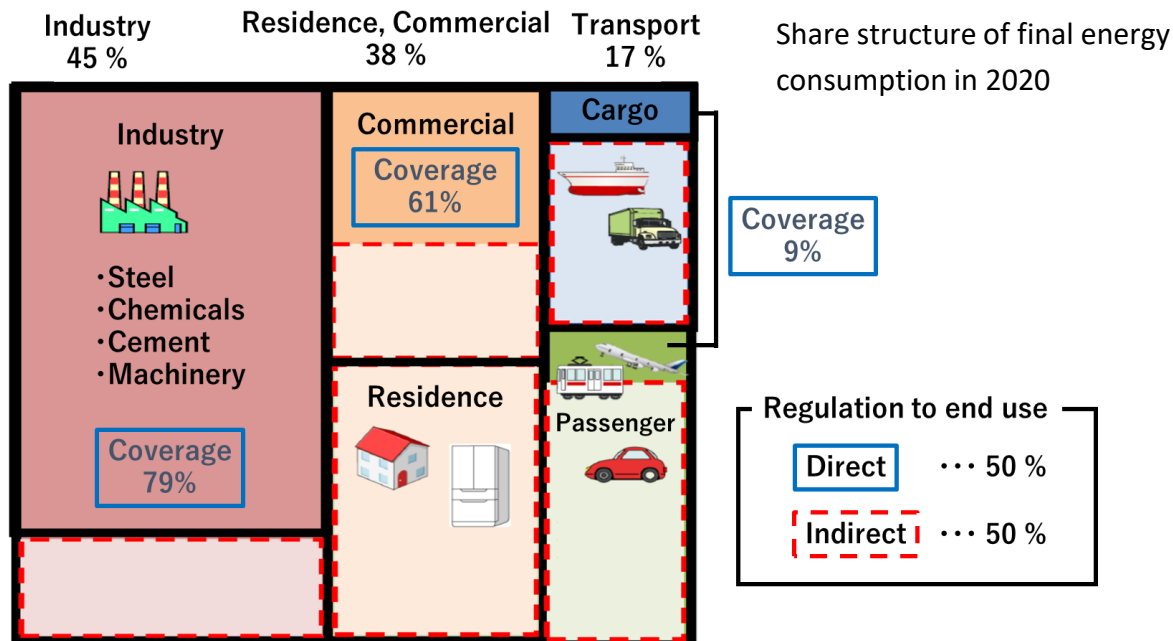
But many barriers exists

Economic	Lack of financial incentives, difficult access to finance, long payback period
Institutional	Complex legislative procedures, non-integrated or conflicting policies and targets
Behavioural	Lack of awareness on savings potential, lack of access to information and knowledge

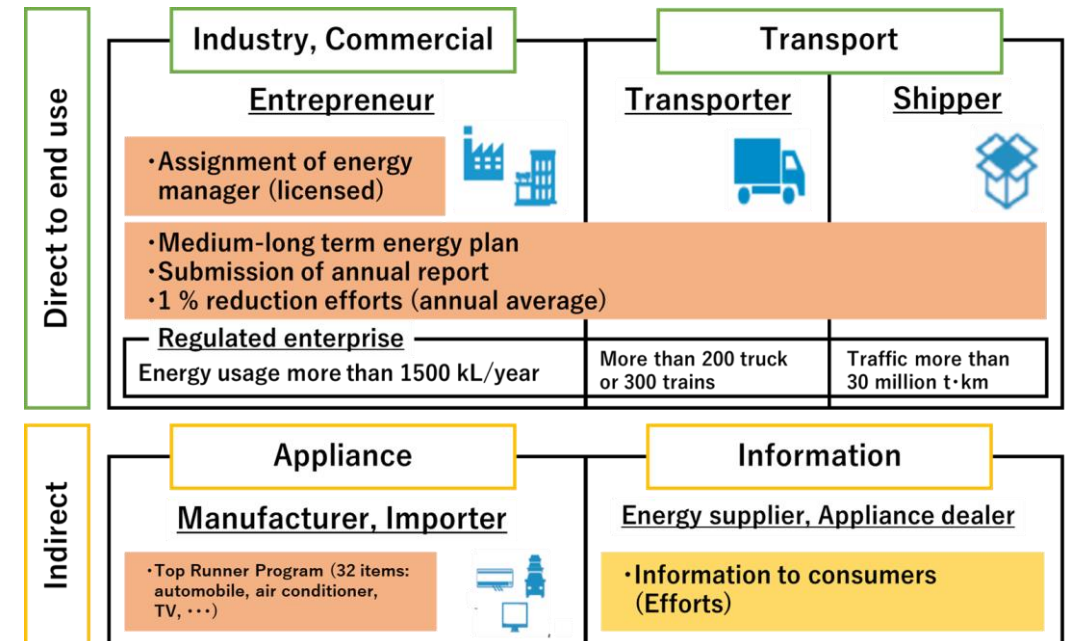
2. Existing policies and governance structures in Japan

- The so-called “Energy efficiency law” was enacted in 1978 and has been continuously improved.
- “The Strategic Energy Plan”, the guiding principle of energy policy, renews EE&C targets and policies every 3 years.
- “The Energy White Paper” reviews the policy and its performance every year.

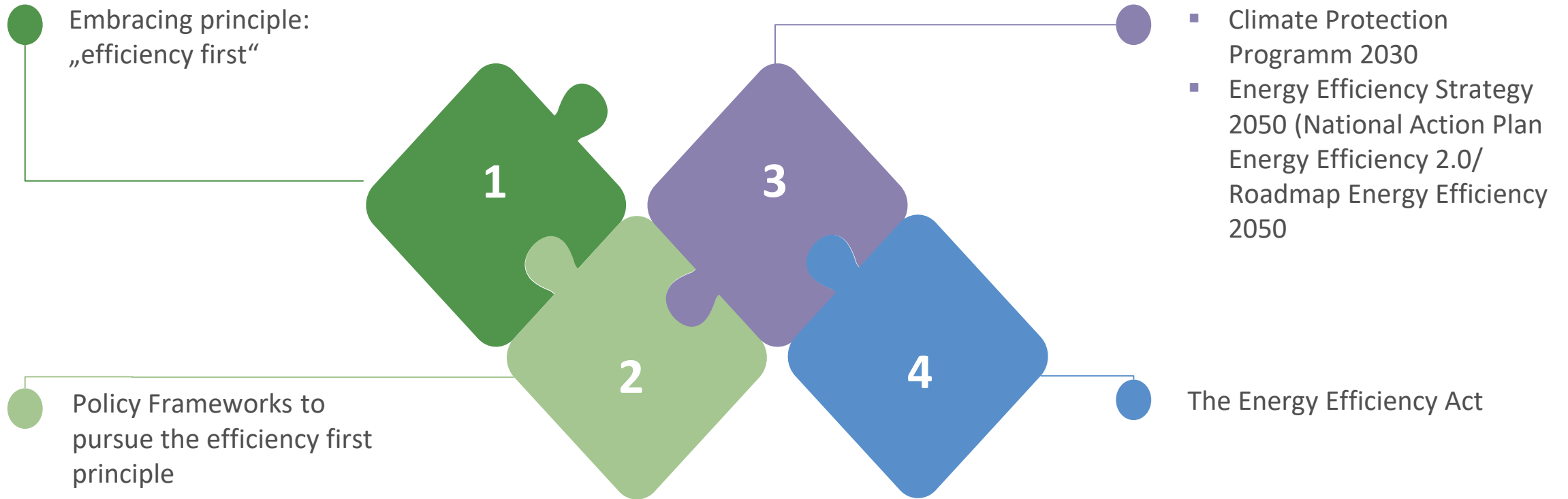
Direct regulation by the law covers half of final energy consumption



Implement sector-appropriate methods



Key existing policies and governance structures in Germany



Ambitious new energy efficiency targets of the Energy Efficiency Act (Energieeffizienzgesetz)



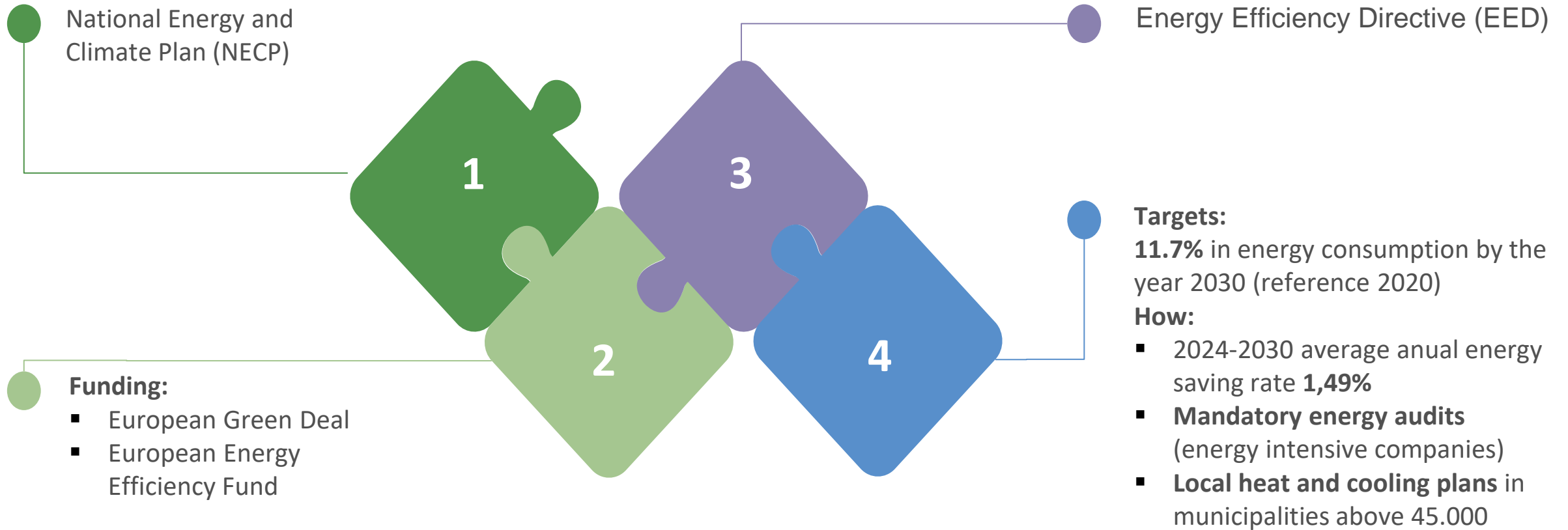
Energy reduction targets (2008 base year):

- **Primary energy consumption (2030):** > 39.3% / absolute 2,253 TWh
- **Final energy consumption (2030):** > 26.5% 2030 / 1,867 TWh
- **Final energy consumption (2045):** 45%

How to reach these ambitious targets:

- By lowering annual final energy consumption 45 TWh starting 2024 until 2030
- Enterprises with a high Energy demand, that exceed on average consumption of 7.5 GWh p.a. are required to implement 'energy or environmental management systems'
- Data centers are required to utilize the waste heat & use renewable energies

Key energy efficiency policies in the European Union



A multitude of Institutions and Ministry leading to inefficiency enforcing energy efficiency

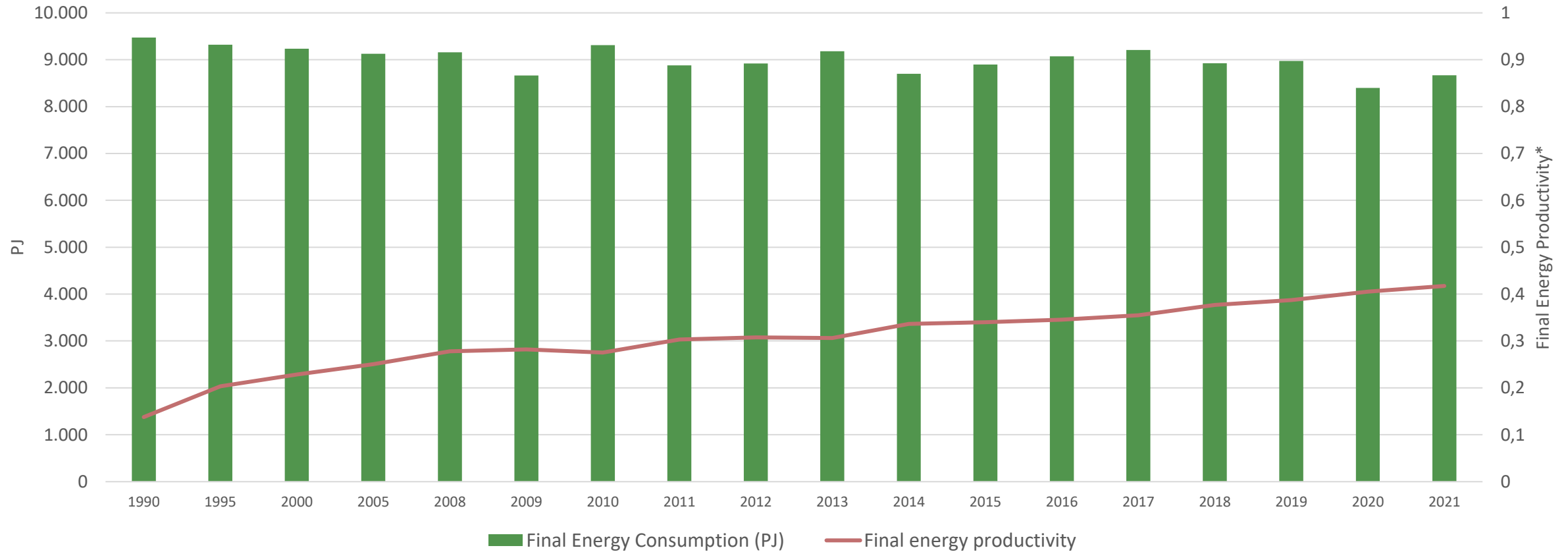


Institution/Ministry	Responsibility regarding energy efficiency
Federal Ministry of Economic Affairs and Climate Action (BMWK)	Shaping national energy policy; including energy efficiency strategies. Developing legislation and initiatives to increase cross-sectoral energy efficiency
Federal Office for Economic Affairs and Export Control (BAFA)	Administers energy efficiency programs & incentives. Providing support for energy efficiency technologies in industry, SME and households
German Energy Agency (dena)	Wide range of task: developing strategies, provide expertise, consulting to initiating energy efficiency projects
Numerous federal and regional energy agencies	Support business, municipalities and households in implementing energy efficiency practises
Credit Institute of Reconstruction (KfW)	Financial support and incentives especially for energy efficient building projects, new and renovations (KfW: is responsible for financing technical building measures; BAFA financing efficient heating technologies)

The institutional setting is complex, but does not close the implementation gap

Energy Efficiency Implementation gap

Final Energy Consumption (PJ) & Final Energy productivity



*Final Energy Productivity = BIP bn. €/Final Energy Consumption PJ

own elaboration based on UBA (2023)

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Elements of effective policy packages

- Energy efficiency is implemented through consumer thinking and decision making.
- Therefore, we analyzed the principles of consumer / investors behavior.
- The factors that influence the investment decision are as follows.

	Description
Acceptance	Commitment, Comparison (between countries, industries, same industry) Assessment - fairness
Pressure	Penalties, publicity, from Trade associations, inspection, monitoring/ Subsidies, Social awareness, comparison, synchronization
Information	Technology, Finance /Who gives information?
KnowLedge	Technology, Finance, Life-cycle cost calculation
Actor	Qualified personnel, Expert engineer, External support (energy efficiency and conservation audit)

Existing policies and their interplay as a package in Japan

Annual reporting

- Give pressure and incentive for making effort.
- Ranked according to efficiency improvements achieved.

Benchmarking

- Assess performance using a common threshold across the industry subsector.
 - Raise awareness of a company's position within the industry subsector.
 - Reflect industry-specific circumstances in assessments.

Awards for workplace and products

- Top runner equipment awards.

Professional Engineer

- National qualifications in high standard.
- The energy general manager must have management authority.
- Providing technical information through seminars, training sessions, and newsletters

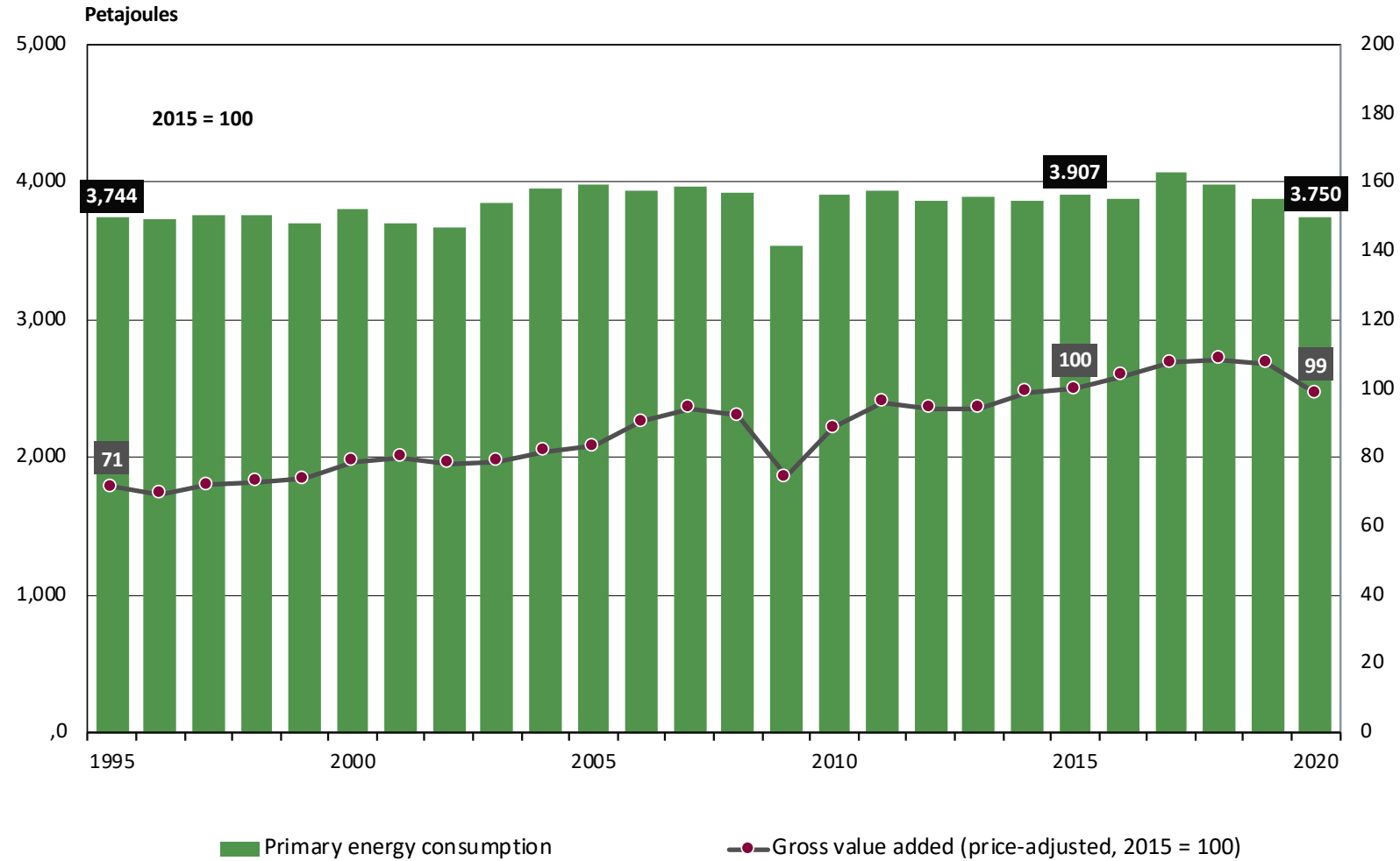
Subsidy

- Budget equivalent to €4.5billion for 3 years starting from 2024.

Diagnosis

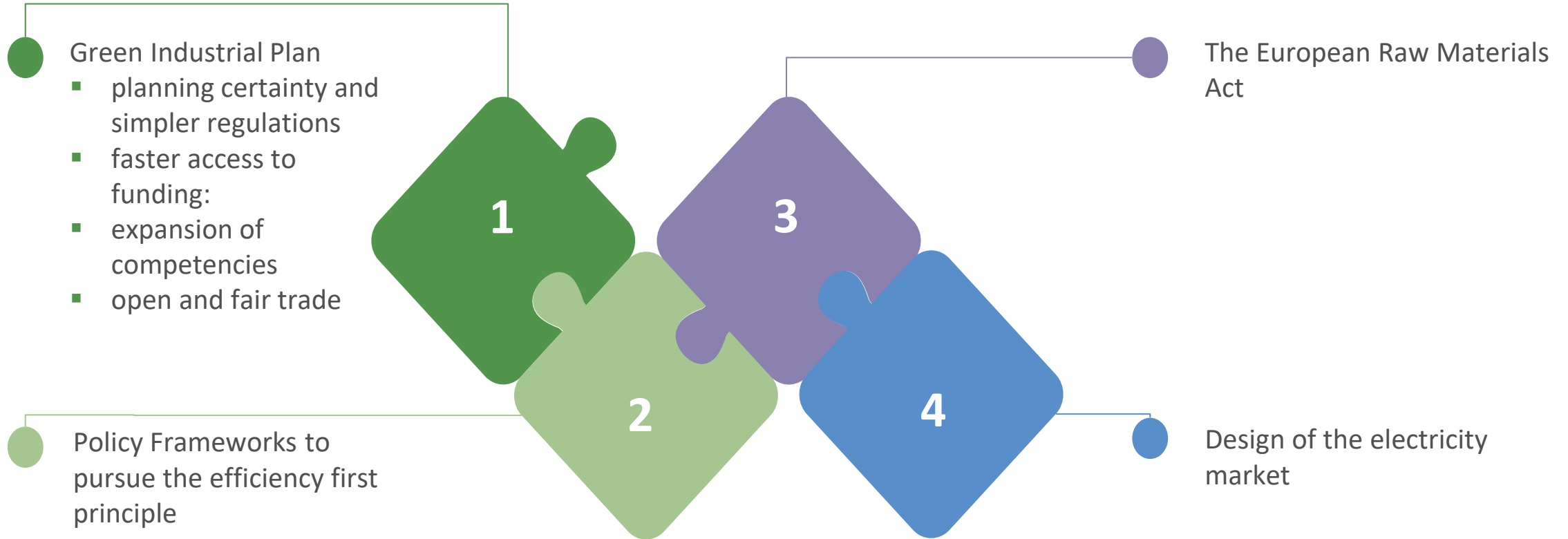
- Technical support for businesses without specialized engineers.

Primary energy consumption in manufacturing industry



Source for energy consumption: Federal Statistical Office of Germany 2022, UGR. Energiegesamtrechnung. Berichtszeitraum 2000-2020. Tabellenblatt 3.4 (in German only); Federal Statistical Office of Germany (m. y.): Tabellen zu den UGR, Umweltnutzung und Wirtschaft, Teil 2, Energie (in German only); Source gross value added: Federal Statistical Office of Germany 2023, Inlandsproduktberechnung - Lange Reihen ab 1970, Fachserie 18, Reihe 1.5 - Tabelle 2.2 (in German only)

Key elements of the European efficiency framework in the industry sector



Federal funding for energy and resource efficiency in the economy - grant and loan



Promotion of Energy and Resource Efficiency in the Economy (EEW)

Technologies that facilitate the transition to a resource-efficient and energy-saving industry

→ Up to 200.000 €, funding rate max. 50%

cross-cutting technologies

- Electric motors and drives
- Pumps for industrial and commercial applications
- Fans
- Compressed air systems and their higher-level controls
- Systems for waste heat recovery or heat recovery from waste water
- Insulation of industrial systems and system components
- Frequency converters

- Soft- and hardware to establish an energy management system
- Instruction or training of personnel

→ Up to 15 mio. € funding rate max. 50%

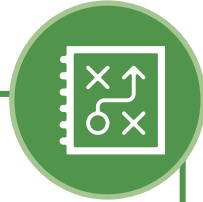
law on heat planning and the decarbonization of heating networks (Heat Planning Act)
Emphises waste heat usage

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Recommendation: Efficiency roadmap up to 2030 and extended Energy Efficiency Law



Establish a roadmap:

- How to contribute to COP28 goals of increasing the annual rate of energy efficiency up to 4%, while taking the tripling of renewable energy capacities up to 2030 into account
- The roadmap should be based on an extended Energy Efficiency Law establishing ambitious and efficiency targets up to 2045 (Germany) and 2050 (Japan) and an effective energy efficiency governance.



Monitoring:

Germany:

- Reporting obligation only every 4 years. Makes adjustments in energy efficiency policies slow
- More frequently monitoring

Japan:

- Ministry have to report the energy white paper yearly & review by The Council on Energy Efficiency
- Japan could further improve the monitoring by establishing key indicators that can well represent the policy target

Recommendation: German federal energy efficiency agency within a policy centric institutional setting



Current Institutional setting in Germany:

- Multitude of different ministries and institutions have scattered responsibilities, relatively low budgets and scarce human resources (comparable to the supply side)
- No clear mandate for planning, monitoring, financing, supporting and reporting in order to reach the ambitious energy efficiency targets
- Fragmentation of responsibilities can lead to inefficiency in the implementation process, inefficient use of financial and human resources, communication conflicts and low transparency

Empower the policy centric institutional setting in Germany:

- Polycentric governance with existing local and regional energy agencies
- Newly established local/regional One-Stop Shops for guiding the retrofit of the building stock
- Existing federal institutions like the DENA, the BfEE and the KfW could be extended or combined within a '**Federal Energy Efficiency Agency**' with a respective efficiency fund

Recommendation: Efficiency lobby & further study



Establish a strong Efficiency Lobby:

- In Germany the “German Business Initiative for Energy Efficiency (DENEFF)” was founded in 2010 (>220 member companies)
- In Germany the lobbying, the influence and the impacts on industries of DENEFF should be strengthened close to the governments, but staying politically independent
- In Japan, many business lobbying bodies that represent different industrial sectors exist besides umbrella institutions such as Keidanren. They are expected keep playing leading role in communication with the government and to enhance EE&C in respective sectors.



Study on saving potential, benefits and costs

- Conduct comprehensive, bottom-up studies on the potentials, benefits and costs of energy savings with cross-cutting technologies for application in all sectors (e.g., motors, pumps, heating/ cooling, communication, appliances) and key processes in energy intensive sectors
- Multiple impacts, e.g., for productivity, jobs, resources etc.

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Recommendation: Efficiency networks & tax benefits



Establish and extend efficiency networks, support for sector-specific efficiency networks:

- Energy Efficiency and Climate Protection Networks initiative by BMWK and the BMUV
- 21 associations and organizations from German industry (399 networks 3,3251 companies and locations)
- Expect knowledge transfer from large to small/medium companies.
- Utility company's engagement may be helpful.
- Network needs to be extended



Initiative
Energieeffizienz- und
Klimaschutz-Netzwerke



Tax benefits through shorter depreciation for energy efficiency investments

- The payback periods for energy efficiency technologies are often too long
- Companies often only have a 3-year horizon
- Depreciation tables (AfA tables) currently have significantly longer periods Energy efficiency measures therefore appear uneconomical

Equalising the investment amount

- The burden of the initial investment amount can be a barrier to energy conservation.
- By hiring energy services or ESCOs, the investment amount can be spread over the life of the contract in the form of a monthly fee.

Recommendations:

Strengthen the policy nexus between energy and resource efficiency

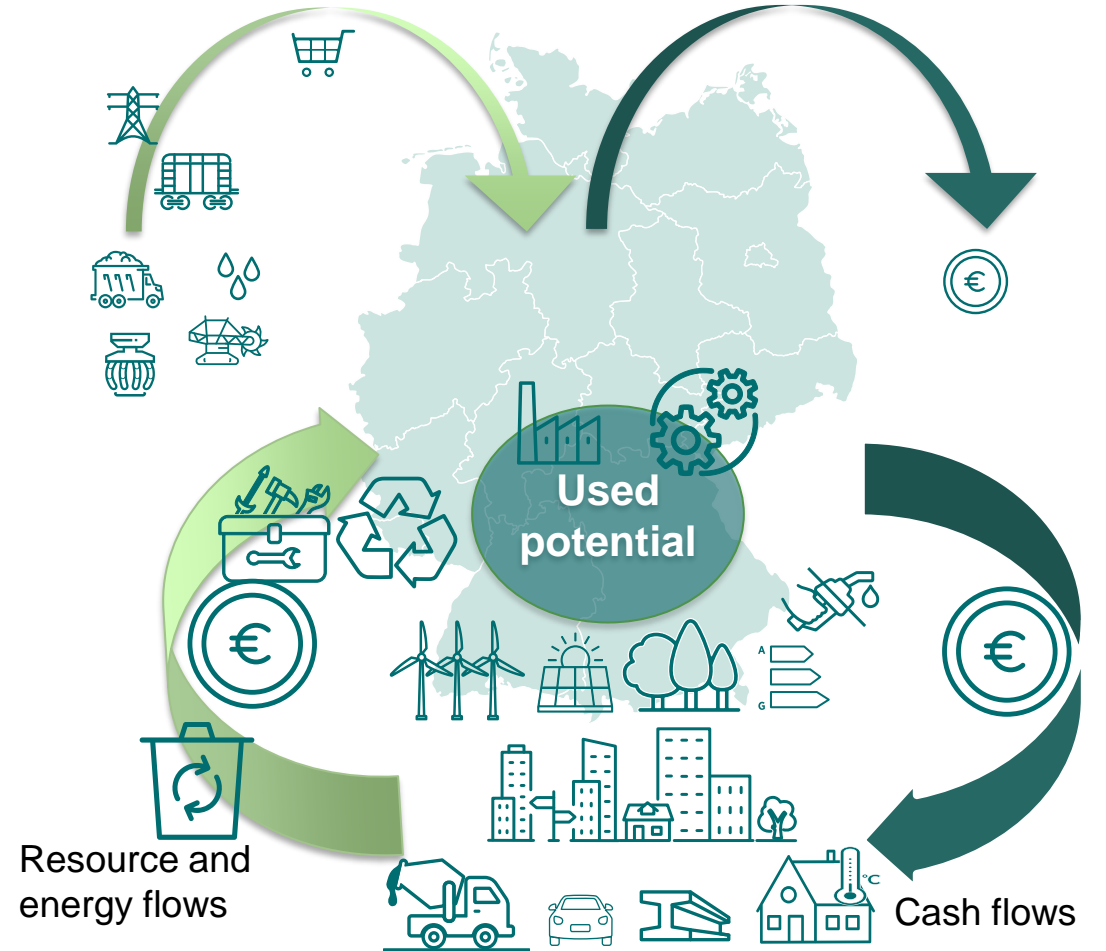
Resource and energy flows

Cash flows



Resource and energy flows

Cash flows



Source: own illustration, based on Hennis / Wagner (2022): Die Ökonomie des Vermeidens von Energie und Material in „Jahrbuch Ökologie“

Recommendation: Industrial waste heat & green steel



Guarantees / risk insurance for the development of industrial waste heat potential in heating networks:

- Good starting point is the Energy Efficiency and Climate Protection Networks initiative
- Involvement of regional coordinators
- Sector-specific networks to increase energy and resource efficiency are very useful
- More efficiency networks, particularly for SMEs, where energy and resource consumption is a high cost factor
- More sector-specific information to spread economic savings activities more quickly



Legal framework and definition for "green" steel

- Regulatory framework: there is currently no standard definition for "green" steel
- Standards for balancing the CO2 steel products
- Encourage markets for green steel
- Counteract the shortage of high-quality steel scrap, which is mainly due to a lack of recycling business models and poor reusability
- Better product regulation
- Improved support for research and development

Question for further discussions:

- From your point of view which changes in energy efficiency policy would have the biggest impact?
- Our policy recommendation for a Federal Energy Efficiency Agency within a polycentric institutional setting in Germany is a controversial point. Do you believe this approach can increase the energy efficiency or would you prefer a different approach?



For further information please visit gjetc.org

Thank you for your attention

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