IEPTT

IMPROVING EMPLOYEE PARTICIPATION IN TWIN TRANSITION



INFORMATIVE PORTAL CONTENT

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1. Introduction to Inclusive Twin Transition

1.1 What is the twin transition?

The term **twin transition** refers to the combined and interlinked processes of **digital transformation** and **green transformation**. In the machinery sector, this means that companies are simultaneously introducing new digital technologies — such as automation, robotics, artificial intelligence, data-driven production systems, digital twins, predictive maintenance and digital workflow management — while also adapting production to environmental requirements, including energy efficiency, emission reduction, circular economy principles, waste reduction and sustainable use of materials.

These two processes are closely connected. Digital technologies can help companies reduce energy consumption, optimise material use, monitor emissions, improve maintenance, reduce waste and stabilise production processes. At the same time, climate and environmental requirements push companies to modernise their technologies, gather better data and redesign production systems. In practice, this means that digitalisation often becomes a tool for the green transition, while the green transition creates new pressure for digital innovation.

The twin transition affects the entire organisation. It changes investment decisions, production methods, work organisation, supply chains, skill needs, occupational safety, environmental responsibilities and the role of workers in transformation processes. It does not simply mean buying new equipment or complying with environmental regulations. It means rethinking **how production is planned, how workers are trained, how decisions are made and how risks and benefits are shared**.

In the IEPTT national reports, the machinery sector is shown as particularly exposed to these changes. The Polish report, for example, identifies automation, artificial intelligence and green technologies as key drivers of transformation, while also showing low awareness among workers and weak influence over decision-making. The Lithuanian report stresses that the sector is gradually moving towards automation, robotics, digital twins and artificial intelligence, but that company readiness differs significantly between large firms and SMEs. The Ukrainian report highlights that digitalisation is already affecting the machinery sector, but green transition remains less developed due to financial constraints, outdated equipment and weak institutional support.

1.2 Why must the transition be inclusive?

An **inclusive twin transition** means that digital and green transformation should not be imposed only from above. Workers and their representatives should not be treated as passive recipients of decisions already made by management, policymakers or technology providers. Instead, they should be involved in understanding, shaping, monitoring and evaluating transformation processes.

The IEPTT project places particular emphasis on this point. The Project's Final Report links inclusive twin transition to the concept of **deliberative democracy**, understood as decision-

making based on informed dialogue, mutual respect, reason-giving and participation of those affected by change. From this perspective, the transition is not only a technical or economic process, but also a democratic and social one.

This is especially important because digital and green transitions do not affect all workers in the same way. Some workers may benefit from new roles, better working conditions and access to advanced training. Others may face job downgrading, displacement, monitoring, insecurity or exclusion from training pathways. Workers with lower qualifications, older workers, women in male-dominated production environments, persons with disabilities, migrants, temporary workers and subcontracted workers may be particularly exposed.

The IEPTT Action Plan identifies several recurring risks across the national reports: low awareness of the twin transition among both workers and employers, weak social dialogue, lack of institutional and financial support, skills mismatches, fragmented coordination, regional inequalities, managerial barriers and underdeveloped deliberative mechanisms. It warns that without stronger participation, the twin transition risks becoming "technologically efficient but socially fragile".

Inclusion is therefore not an optional social add-on. It is a condition for effective transformation. When workers understand why change is happening, how it will affect their work, what skills will be needed and how they can influence decisions, they are more likely to support and contribute to transformation. When they are excluded, uncertainty increases, resistance grows and implementation becomes more difficult.

1.3 Why employee participation matters

First, it improves the **quality of decisions**. Workers can identify operational risks, training needs and implementation barriers early. For example, a new digital monitoring system may appear efficient in management planning, but workers may identify risks related to stress, workload, autonomy or unfair performance evaluation.

Second, participation improves **trust and legitimacy**. The IEPTT reports repeatedly show that where decisions are made top-down, workers often perceive the transition as a threat. The Polish report identifies a clear link between weak employee influence and top-down implementation. The Ukrainian report similarly shows that employee influence on strategic decisions remains limited, while workers and experts call for regular consultations, representation in decision-making bodies and training.

Third, participation supports **skills development**. Workers' representatives can help identify who needs training, what kind of training is relevant, and which groups risk exclusion. The IEPTT reports show strong demand for digital, green and hybrid skills, but also uneven access to training. Training should therefore not be treated only as a technical HR measure; it should be part of participatory transformation planning.

Fourth, participation helps protect **social justice**. The twin transition can create new inequalities if better training and new roles are available only to selected groups. The Italian

report strongly emphasises that inclusion must be treated as a core indicator of the effectiveness and sustainability of the transition, not as an additional concern.

Finally, participation strengthens **company resilience**. Companies that involve workers are better able to anticipate conflict, retain skills, maintain morale and align technological investment with organisational capacity. In this sense, participation is not only a workers' right. It is also a strategic resource for employers.

1.4 Key EU goals for 2030 and 2050

The twin transition in European industry is guided by EU frameworks on decarbonisation, digitalisation, skills, social rights and competitiveness. The European Green Deal sets the goal of climate neutrality by 2050, pushing sectors such as machinery to cut energy use, modernise production and join low-carbon value chains. The Fit for 55 Package strengthens the 2030 emissions target, creating new regulatory, cost and skills pressures for companies and workers.

Digital transformation is supported by the Digital Europe Programme, which promotes AI, cybersecurity, data use, automation and advanced digital skills. The European Industrial Strategy links technological modernisation with competitiveness, resilience and strategic autonomy.

The European Pillar of Social Rights ensures that the transition includes fair working conditions, lifelong learning, social dialogue, equality and workers' rights to information and consultation. Other EU tools, including the Just Transition Fund, ESF+, RRF and sustainability reporting rules, reinforce participation, fairness and transparency.

For workers' and employers' representatives, these frameworks create obligations, opportunities and arguments for stronger involvement in company-level change.

2. 2. Machinery Sector Context and IEPTT Research Findings

2.1 The machinery sector in the twin transition

The machinery sector occupies a strategic place in Europe's industrial structure. It supplies equipment, components, technical systems and production technologies used across many other sectors, including construction, transport, energy, agriculture, metallurgy, automotive production and environmental technologies. For this reason, the digital and green transformation of the machinery sector has effects that reach far beyond individual companies. It influences wider European value chains, regional labour markets, technological innovation and the ability of industry to meet climate and competitiveness targets.

The sector is also particularly exposed to the pressures of the twin transition. On the one hand, machinery companies are expected to modernise production through automation, robotics, digital production planning, sensor-based monitoring, data analytics, artificial intelligence and predictive maintenance. On the other hand, they must respond to environmental requirements

by reducing energy consumption, lowering emissions, improving material efficiency, limiting waste and adapting to circular economy principles. These processes require investment, new skills, new forms of work organisation and stronger cooperation between management and workers. In the machinery sector, these processes are not abstract policy concepts. They are visible in the introduction of automated assembly lines, digital quality-control systems, energy monitoring, smart sensors, new waste-management procedures, and the redesign of production workflows.

However, IEPTT research shows that this transition is uneven. Large and internationally connected companies usually adapt faster because they have better access to finance, technology, management expertise and training systems. Small and medium-sized enterprises often face more serious barriers, including limited resources, lack of qualified staff, fragmented support and uncertainty about which technologies or sustainability measures to prioritise.

This sectoral context is important because the success of the twin transition depends not only on investment in technologies, but also on the capacity of workers, employers and social partners to understand, negotiate and implement change. The machinery sector needs to become more digital, more energy-efficient and more competitive. But also it must also become more participatory.

2.2 Key findings from the IEPTT research

The IEPTT project gathered evidence from seven national reports: Bulgaria, Czech Republic, Italy, Lithuania, Montenegro, Poland and Ukraine. The research used surveys, expert interviews and focus groups to examine awareness, preparedness, participation, training needs and barriers to inclusive twin transition in the machinery sector.

Across countries, several findings are particularly important. First, **awareness of the twin transition is generally low or moderate**. Workers often recognise that technological and environmental changes are taking place, but they do not always understand the broader concept of the twin transition, the EU policy framework, or the likely consequences for their jobs. In Poland, average awareness scores were low, around 2.3–2.6 on a five-point scale, indicating a significant education and communication gap. In Ukraine, only 7% of surveyed workers rated their knowledge of the twin transition concept as high, while 43% rated it as low or very low.

Second, **workers' participation in transition decisions remains weak** in the countries analysed in the project. In many enterprises, digitalisation and environmental initiatives are planned and implemented by management, technical departments or external consultants, while workers are informed late or only after decisions have already been made. The Action Plan states that all national reports stress the top-down nature of decision-making in most machinery firms, with digital and environmental initiatives usually designed without meaningful consultation. The Polish report shows that 70% of respondents assessed employee influence as weak, while the Ukrainian report reports that 73% of respondents saw employee influence as slight.

Third, the research shows a **significant skills mismatch**. The machinery workforce needs digital skills, green skills and hybrid competences combining technical, environmental and problem-solving abilities. Yet training systems are often fragmented and access to learning is uneven. The Lithuanian report stresses the need for upskilling and reskilling programmes focused on green technologies, digital skills and automation, implemented in cooperation between educational institutions, trade unions and employers. The Ukrainian report identifies digital skills, hybrid skills and green skills among the most needed training areas. The Action Plan also stresses that trade unions are rarely involved in training design, despite their ability to identify workers' real learning needs.

Fourth, **companies often lack coherent long-term strategies**. Transformation is frequently implemented through isolated projects rather than integrated plans linking technology, employment, training, environmental goals and participation. The Lithuanian report notes that some companies do not have a long-term transformation strategy and that changes are often implemented as individual projects without a coherent plan or shared vision. The Czech report similarly identifies fragmentation and insufficient coordination between actors as a key barrier.

Fifth, the **transition risks reinforcing inequalities**. Vulnerable groups may be excluded from training, new roles and participation channels. Older workers often face difficulties with digital tools; women remain underrepresented in technical and engineering roles; workers with lower qualifications may have fewer opportunities for reskilling; migrants, temporary workers and subcontracted workers may be outside formal representation structures. The Final Report emphasises that twin transition may negatively affect both spatial and social justice unless inclusion is placed at the centre of policy and company practice.

Together, these findings show that the twin transition in the machinery sector is not only a question of technology or regulation. It is a question of participation, institutional capacity and social justice.

2.3 Country snapshots

Bulgaria

The Bulgarian national report shows a clear gap between awareness and real participation. Survey results indicate that a significant group of workers are aware of the twin transition and recognise the need for training, but structured mechanisms for participation remain weak. The report notes that 41% of participants scored their awareness relatively high, while actual participation received lower scores, with 55% answering at lower or medium levels. It also emphasises that more than 70% of respondents gave high scores to training needs, showing strong demand for retraining programmes.

The Bulgarian findings suggest that employees are not opposed to change. On the contrary, many are willing to participate more actively, but lack institutional channels, feedback mechanisms and internal company forums. The report recommends mandatory employee

consultations when new green or digital technologies are introduced, participation manuals and stronger partnerships between trade unions, educational institutions and business.

Czech Republic

The Czech report presents the twin transition as inevitable and potentially beneficial, especially for efficiency, competitiveness, circular economy and technological self-sufficiency. However, it also identifies strong barriers, including lack of finance, shortage of qualified labour, insufficient coordination, slow standardisation and weak market demand for green solutions.

A key finding is the difference in priorities between social groups. Management tends to focus on economic benefits, while employees and trade unions focus on job security and working conditions. The report concludes that the success of the transition depends on intensive cooperation among stakeholders, major investment in education and retraining, and a stable legislative and financial environment.

Italy

The Italian report places particular emphasis on inclusion, trust and co-created transition. It argues that twin transition can be perceived as a technocratic imposition when workers are not involved. It highlights the risk that young skilled workers may disengage from local productive systems if they perceive them as non-inclusive, while contractual precariousness undermines trust and willingness to embrace change.

The Italian report stresses that discussions with employees should not be the final step in a pre-planned project, but the space where transformation itself is shaped. It also highlights the need to involve people with disabilities, young people and women in technical roles, treating inclusion as an indicator of transition quality rather than an additional policy area.

Lithuania

The Lithuanian report shows that the machinery manufacturing sector is already undergoing digitalisation, automation, robotisation and energy-efficiency improvements. However, the pace of change is uneven and depends strongly on company size. Large companies have more resources to adapt, while SMEs often lack financial and human capacity.

The report identifies skills shortage as one of the main problems. It notes that many companies, especially SMEs, lack funds for advanced digital technologies, sustainable production methods and employee training. It also warns that when changes are implemented without employee involvement, they are often perceived as threats to jobs, routine or occupational safety, resulting in resistance and lower motivation.

Montenegro

The Montenegrin report describes Montenegro as a small, open economy with important challenges related to industrial modernisation. Its industrial and mechanical engineering

sectors face outdated capacities, limited innovation, low competitiveness and shortage of skilled labour. Modernisation, digitalisation, automation, robotics and Industry 4.0 solutions are identified as important pathways to improved competitiveness.

At the same time, the report stresses the need for investment, workforce development, R&D, stronger institutional frameworks and better links with European supply chains. It also highlights the risk that the twin transition may deepen inequalities unless vulnerable groups are supported and policies are designed inclusively.

Poland

The Polish national report identifies low awareness, partial company preparedness and weak employee influence as key challenges. Based on surveys, expert interviews and focus group research, it shows that awareness of the twin transition is low, with average ratings around 2.3–2.6, while company preparedness is only partial, with average scores around 2.7–3.0.

One of the most important findings is the weakness of employee influence. The report states that 70% of respondents rate employee influence as weak, which correlates with a top-down approach to implementation. It recommends stronger financial incentives, training programmes — especially digital and hybrid — and enhanced employee participation as a condition for a just transition.

Ukraine

The Ukrainian report shows low awareness and limited company readiness, particularly in green transition. Only 7% of respondents rated their knowledge of the twin transition concept as high, while 43% rated it as low or very low. The report also highlights outdated equipment, limited funding, weak trade union engagement, martial-law-related instability and low digital and environmental competences.

Employee influence is very limited: 73% of respondents assessed it as slight, while expert interviews confirmed that strategic decisions are mainly made by top management. However, the report also identifies opportunities, including regional training hubs, pilot projects in technology parks, co-financing programmes, educational campaigns and stronger involvement of NGOs and social partners.

2.4 Main risks for workers and enterprises

The IEPTT research shows that the twin transition carries important risks if it is implemented without participation, training and social safeguards.

Major risk perceived by the respondents in the sector is **job insecurity**. Workers may fear that automation will replace them rather than transform their roles. Even when jobs are not eliminated, job content may change significantly, requiring new skills, more monitoring and greater responsibility. Without clear employment pathways, workers may experience uncertainty, stress and resistance.

A second risk is **unequal access to training**. If training is offered mainly to younger, permanent or already-skilled workers, other groups may be left behind. Older workers, women, subcontracted workers, temporary workers and workers with lower formal education may become more vulnerable to job downgrading or redundancy.

A third risk is **work intensification and digital surveillance**. Digital tools can improve efficiency, but they can also increase the pace of work, reduce autonomy and enable constant monitoring. Algorithmic performance systems may create stress if workers do not understand how data is collected, assessed and used.

A fourth risk is **fragmentation of the workforce**. Outsourcing, subcontracting, short-term contracts and project-based employment may increase flexibility for companies, but they can weaken collective representation, reduce access to training and create two-tier workforces.

A fifth risk is **environmental compliance without social consideration**. Green transition may introduce new reporting tasks, stricter procedures, energy-efficiency targets and waste-management responsibilities. If these are added without training, recognition or consultation, workers may experience environmental transition as an additional burden rather than a shared objective.

A sixth risk is **weak legitimacy of transformation**. The Final Report stresses that employees often remain passive recipients of information and decisions rather than active participants in planning and implementation. This weakens trust and makes the transition less effective.

For enterprises, these risks are also strategic. Poorly governed transition can lead to resistance, skill shortages, implementation delays, lower morale, reputational problems and compliance failures. Companies that overlook the workforce dimension may invest in technology but fail to achieve sustainable organisational change.

3. 3. Legal and Policy Framework

3.1 Why the legal and policy framework matters?

The inclusive twin transition is shaped not only by company decisions, technological trends and market pressures, but also by a dense framework of **European and national laws, strategies and policy instruments**. These frameworks define climate targets, digitalisation priorities, workers' rights, reporting duties, training objectives and mechanisms for employee participation. For workers' and employers' representatives, understanding this framework is essential because it explains why many changes are taking place and what rights and responsibilities apply during transformation.

In the machinery sector, companies are increasingly affected by EU climate targets, digital industrial policies, sustainability reporting obligations, skills strategies and labour law standards. These rules influence investment planning, restructuring, training, energy-efficiency measures, digital systems, subcontracting, supply chains and corporate governance. They also

provide important arguments for worker participation: workers should be informed, consulted and involved in shaping how that transformation happens.

The IEPTT Action Plan stresses that the twin transition must be aligned with the **European Pillar of Social Rights**, the **European Green Deal** and the **EU Digital Strategy**, and that employee participation should be treated as a condition for fair and effective transformation, not as an additional or optional procedure. The IEPTT Final Report similarly emphasises that the transition cannot be realised through a purely top-down model; it requires inclusion, deliberative dialogue and meaningful involvement of those affected by change.

This section provides a practical interpretation of the most important legal and policy frameworks. It is not a substitute for legal advice, but a knowledge base that helps representatives understand which rules matter, why they matter, and how they can support inclusive twin transition at undertaking level.

3.2 EU policy framework for the twin transition

The **European Green Deal** is the EU's central long-term strategy for transforming Europe into a climate-neutral economy by 2050. It links climate protection, industrial modernisation, resource efficiency and social fairness. The European Commission describes climate neutrality by 2050 as a legally binding objective under the European Climate Law, with the 2030 emissions-reduction target set at least 55% compared with 1990 levels.

For undertakings in the machinery sector, the Green Deal is relevant because it drives new requirements for energy efficiency, emissions reduction, circular economy practices, sustainable production, cleaner technologies and environmental reporting. It also creates pressure on companies to modernise machinery, production processes and supply chains. For workers, this means new tasks, new skills, new safety issues and possible restructuring. The Green Deal therefore needs to be understood not only as an environmental policy, but also as an industrial and social transformation framework.

The **Fit for 55 Package** operationalises the 2030 climate target. It revises and strengthens EU legislation on emissions trading, energy efficiency, renewable energy, carbon-border adjustment and other climate-related instruments. In practical terms, it increases pressure on energy-intensive industries and their supply chains to reduce emissions and improve resource efficiency. Machinery companies may be directly affected through energy costs, customer requirements, procurement standards, emissions-related obligations or demand for low-carbon technologies.

The **Digital Europe Programme** and the broader EU digital agenda support the deployment of advanced digital capacities such as artificial intelligence, cybersecurity, high-performance computing, data infrastructure and advanced digital skills. For the machinery sector, this means stronger incentives and support for automation, data-driven production, digital twins, predictive maintenance, smart manufacturing and digital management systems. However,

digital transformation also raises questions about worker data, surveillance, algorithmic management, skills gaps and the need for human oversight.

The **European Industrial Strategy** connects competitiveness with resilience, digitalisation and decarbonisation. It promotes modernisation of industrial ecosystems, support for SMEs, strategic value chains, clean technologies and innovation. For machinery companies, it signals that long-term competitiveness will depend on the capacity to integrate digital and green innovation. For workers' representatives, it confirms that skills, participation and workforce adaptation must be part of industrial strategy.

The **European Pillar of Social Rights** gives the social dimension of the twin transition a clear reference point. It emphasises equal opportunities, fair working conditions, social dialogue, lifelong learning, gender equality and workers' rights to information and consultation. In the context of the IEPTT project, the Pillar is important because it links industrial transformation with participation and social justice. The transition should not simply produce cleaner and more digital companies; it should also produce better, fairer and more inclusive workplaces.

EU funding instruments also matter. The **Just Transition Fund**, **European Social Fund Plus (ESF+)**, **Recovery and Resilience Facility**, **Digital Europe Programme** and other EU programmes can support training, reskilling, regional transformation, digital upgrading and green investment. The IEPTT Action Plan identifies sustainable funding as a major condition for effective training and participation, especially in countries and SMEs where financial resources are limited.

3.3 EU labour law and participation rights

The legal foundation for inclusive twin transition is not limited to climate and digital policy. It also includes EU labour law, especially rules on information, consultation, participation, collective bargaining, equality and worker protection.

The **Information and Consultation Directive 2002/14/EC** establishes a general framework for informing and consulting employees in the European Community. It requires Member States to ensure that workers' representatives receive information and are consulted on issues such as the undertaking's economic situation, employment prospects and decisions likely to lead to substantial changes in work organisation or contractual relations.

The **European Works Councils Directive 2025/2450** **(revising the Directive 2009/38/EC)** is relevant for transnational companies. It provides a mechanism for informing and consulting workers' representatives in Community-scale undertakings and groups of undertakings. For machinery companies operating in several European countries, this can be essential where digitalisation, restructuring, production relocation or environmental investment affects workers across borders. European Works Councils can help compare how transition measures are implemented in different sites and can support more consistent social standards.

The **Adequate Minimum Wages Directive 2022/2041** is also relevant because it emphasises the importance of collective bargaining coverage. While its main focus is adequate minimum

wages, it recognises that collective bargaining is a central mechanism for improving working conditions and reducing inequality. In the twin transition, collective bargaining can address issues such as training rights, job security, working time, pay progression, digital monitoring, subcontracting and equality.

The **Corporate Sustainability Reporting Directive (CSRD)** introduces more detailed sustainability reporting requirements for companies. It requires many large companies to report not only on environmental matters but also on social and workforce-related issues, including working conditions, equal treatment, training, diversity and human rights in value chains. For BLERs and worker representatives, CSRD is important because it brings social sustainability into corporate governance. Worker-related impacts of digital and green transition should be visible in company reporting and not hidden behind purely technical or financial indicators.

The **EU Artificial Intelligence Act**, adopted as Regulation (EU) 2024/1689, establishes harmonised rules for artificial intelligence and includes obligations relevant to high-risk AI systems. In workplace contexts, AI may be used for recruitment, task allocation, performance monitoring, scheduling or risk assessment. Worker representatives should therefore pay attention to transparency, human oversight, non-discrimination, data protection and the possibility that algorithmic systems may affect workers' rights and dignity.

The **General Data Protection Regulation (GDPR)** is also relevant wherever digital systems collect, process or analyse employee data. Digital monitoring, productivity dashboards, biometric systems, location tracking and AI-supported evaluation all raise questions about lawful processing, proportionality, purpose limitation and workers' ability to understand how their data are used.

Equality-related directives are equally important. The **Work–Life Balance Directive 2019/1158** supports carers and parents, and is relevant where digitalisation or new shift systems affect working time and care responsibilities. The **Pay Transparency Directive 2023/970** strengthens tools to address gender pay gaps and is relevant where new digital or green roles create new classifications, pay structures or promotion pathways. These instruments help ensure that the twin transition does not reproduce or deepen existing inequalities.

3.4 Board-level employee representation

Board-level employee representation is one of the strongest forms of employee participation. It allows workers' representatives to participate in corporate governance bodies, such as supervisory boards or administrative boards, and to contribute to strategic decisions concerning investment, restructuring, workforce planning, sustainability and long-term company development. This form of participation is particularly relevant for the twin transition because many digital and green decisions are made at board level. Automation projects, decarbonisation investments, outsourcing strategies, restructuring plans, ESG reporting, AI adoption and supply-chain changes are not only operational matters. They are strategic choices

that determine the future of the company and its workforce. Board-Level Employee Representatives can help ensure that the workforce dimension is considered when boards discuss transformation. They can ask whether new technologies will change job profiles, whether training budgets are sufficient, whether restructuring plans include redeployment pathways, whether subcontracting creates labour-standard risks, whether AI systems are transparent and whether sustainability reporting reflects real working conditions.

The IEPTT online training course for BLERs develops this role in detail. It presents BLERs as strategic actors who connect corporate transformation with social responsibility, workforce planning, equality, skills and sustainable governance. This is consistent with the Action Plan's emphasis on inclusive governance and multi-level coordination. Board-level representation does not replace trade unions, shop stewards or works councils. It complements them. Shop stewards and workplace representatives understand daily working conditions, while BLERs can influence strategic decisions before they are implemented. Cooperation between these levels is essential. This is especially important in the twin transition, where decisions made at the top of the company may quickly affect tasks, jobs, working time, skills and equality on the shop floor.

4. 4. Employee Participation: Information, Consultation and Participation Rights

4.1 Why participation is central to inclusive twin transition

Employee participation is one of the central conditions for a fair and effective twin transition. Digitalisation and decarbonisation change production processes, skills, job profiles, work organisation, investment priorities and corporate governance. These changes directly affect workers, but in many enterprises they are still designed and implemented primarily by management, technical departments or external consultants. The IEPTT research repeatedly shows that workers are often informed late, consulted superficially, or excluded from strategic decisions altogether. This creates mistrust, uncertainty and resistance, even where transformation could bring long-term benefits.

Participation is not a single action. It is a process that can include several levels: **information**, **consultation**, **collective bargaining**, **board-level employee representation**, and **co-governance mechanisms.** These forms differ in strength and legal basis, but they share a common objective: ensuring that workers' knowledge, concerns and proposals influence how digital and green changes are implemented.

For employers, meaningful participation is also beneficial. It improves the quality of decisions, identifies operational risks earlier, supports smoother implementation, reduces conflict and strengthens trust. Workers often understand the practical consequences of new technologies before they appear in formal risk assessments. They know which tasks will change, where safety risks may arise, which groups need training, and where new processes may increase workload or reduce autonomy. For this reason, employee participation should not be seen as an obstacle to transformation, but as a strategic resource for better transformation.

4.2 Information: what workers and their representatives should know

Without timely and understandable information, neither consultation nor negotiation can be meaningful. In the context of the twin transition, information should not be limited to general announcements about modernisation. Workers' representatives need concrete, structured and usable information about planned technological, environmental and organisational changes.

Under the Information and Consultation Directive 2002/14/EC, information means that the employer must provide data to workers' representatives in such a way that they can become acquainted with the subject matter and examine it. In practice, this means that information should be provided early enough, with sufficient detail, and in a form that allows representatives to assess possible consequences for employment and working conditions.

In the machinery sector, information should cover planned or ongoing changes such as the introduction of automation, robotics, AI-based tools, digital monitoring systems, energy-efficiency measures, new environmental procedures, restructuring plans, subcontracting, changes in job classifications, new training requirements and impacts on working time. It should also include the expected timeline, affected departments, investment objectives, employment implications, health and safety risks and training measures.

The IEPTT national reports show that lack of information is one of the main barriers to participation. In Poland, workers reported low awareness of the twin transition and weak influence on decisions, with 70% assessing employee influence as weak. In Ukraine, only a small minority of respondents declared high knowledge of the twin transition concept, while employee influence was assessed as limited and strategic decisions were largely made by top management. In Lithuania, decisions on twin transformation were often made at management level, while social partners were informed after the fact.

Good information therefore means more than communication. It requires disclosure of relevant facts before decisions become irreversible. If management informs workers only after a new technology has been purchased, a restructuring plan approved or a new shift system designed, the possibility of participation is already reduced. Information should allow workers' representatives to understand not only what will happen, but why it will happen, who will be affected, what alternatives were considered and how negative impacts will be mitigated.

4.3 Consultation: dialogue before decisions are finalised

Consultation goes beyond information. It means an exchange of views between the employer and workers' representatives before decisions are finalised. Consultation is meaningful only when representatives have time to analyse the information, gather workers' opinions, formulate questions, present concerns and propose alternatives.

The Information and Consultation Directive defines consultation as the exchange of views and establishment of dialogue between workers' representatives and the employer. In the context of twin transition, this means that employers should not treat consultation as a formal step after decisions have already been made. A consultation meeting held only to announce a pre-decided

restructuring or technology implementation does not reflect the spirit of meaningful participation.

Effective consultation should happen early in the planning process. If a company plans to introduce AI-assisted production planning, automated quality control or new energy-efficiency systems, consultation should take place before the final investment or implementation decision. Workers' representatives should be able to discuss how the technology will affect tasks, skills, staffing levels, performance monitoring, health and safety, and equality. They should also be able to propose adjustments, training measures or safeguards.

The IEPTT Action Plan identifies weak and formalistic social dialogue structures as a recurring problem across the national reports. It notes that digitalisation and environmental initiatives are often designed top-down, with workers expected to adapt rather than co-create change. The Bulgarian report similarly shows that employees are motivated to participate, but lack structured mechanisms and internal forums for real involvement.

Consultation should therefore be organised as a process rather than a single meeting. It can include preparatory information sharing, internal worker discussions, formal consultation meetings, written responses, follow-up explanations from management and monitoring of implementation. Consultation should also include different categories of workers, especially those most affected by change. This is important because the twin transition does not affect all groups equally. Older workers, women, migrant workers, temporary workers, subcontracted staff and workers with disabilities may experience specific risks and should not be excluded from consultation processes.

4.4 Participation: from consultation to co-governance

Participation is broader than information and consultation. It refers to the ways in which workers and their representatives can influence decisions, contribute to the design of solutions and share responsibility for the implementation of change. Participation may be direct or indirect, formal or informal, workplace-level or board-level.

Direct participation may include worker surveys, team meetings, suggestion systems, pilot groups, participatory workshops or problem-solving meetings. These tools can be useful when introducing new technologies, redesigning workflows or identifying training needs. However, direct participation should not replace collective representation. Individual feedback is valuable, but workers also need collective voice through trade unions, works councils, shop stewards and board-level representatives.

Indirect participation takes place through elected or appointed representatives. Shop stewards and trade union representatives can request information, consult workers, negotiate agreements and monitor the effects of transformation. Works councils can provide structured channels for dialogue. European Works Councils can address transnational restructuring and transformation in multinational companies. Board-Level Employee Representatives can

influence strategic decisions on investment, restructuring, ESG reporting, workforce planning and long-term sustainability.

Participation is especially important in the twin transition because many decisions are complex and long-term. A company may decide to automate part of production, outsource certain functions, introduce digital monitoring, redesign energy systems or restructure job classifications. These decisions cannot be assessed only through financial or technical criteria. They also require social criteria: employment continuity, skills development, equality, health and safety, work intensity, data protection and inclusion.

5. 5. Scenario-Based Guidance for Enterprises

5.1 Why scenario-based guidance is needed

The IEPTT research confirms that there is no single model of employee participation that can be applied uniformly across all countries and enterprises. The machinery sector in Europe operates under very different institutional, legal and economic conditions. Some companies function in countries with strong collective bargaining traditions and established employee representation structures. Others operate in environments where social dialogue exists formally but is weak in practice. In many SMEs, there may be no trade union presence, no active works council and no regular mechanism for consulting workers before digital or green changes are introduced.

This diversity is one of the central findings of the IEPTT Action Plan. It shows that participation practices differ significantly depending on national industrial relations systems, company size, sectoral traditions and the maturity of dialogue mechanisms. The Action Plan therefore proposes a flexible, scenario-based approach rather than a single universal blueprint.

Scenario-based guidance helps enterprises and representatives identify where they currently stand and what kind of participation model is realistic in their context. A large multinational company with an active European Works Council and board-level employee representation may be ready for structured co-governance. A medium-sized company with a trade union presence but limited consultation practice may first need regular dialogue platforms and joint training planning. A small enterprise with no formal representation structure may need to begin with awareness-raising, worker surveys, informal consultation and capacity-building.

The aim is not to classify countries or companies permanently. The scenarios should be understood as **development pathways**. An enterprise may begin with basic consultation, move towards partnership and dialogue, and eventually develop more structured forms of co-governance. The long-term objective is to make participation a normal and permanent part of how digital and green transformation is planned, implemented and monitored.

5.2 Scenario 1: Structured Co-Governance Model

The **Structured Co-Governance Model** applies mainly to enterprises operating in advanced institutional contexts, where collective bargaining, workplace representation and board-level participation are already well developed. In this scenario, workers and their representatives are

not merely informed or consulted. They take part in shaping the direction, sequencing and social conditions of digital and green transformation.

This model is most appropriate for companies with established trade union representation, active works councils, functioning European Works Councils, board-level employee representation, or mature sectoral collective agreements. It is also relevant for larger companies where investment decisions concerning automation, decarbonisation, restructuring or digital systems are significant enough to require long-term workforce planning.

In a co-governance model, the twin transition is managed through permanent or semi-permanent structures. These may include **joint transition committees**, sectoral transformation councils, company-level digitalisation boards, training committees, sustainability committees or board-level governance mechanisms involving employee representatives. Their purpose is to ensure that transformation is not fragmented into isolated technological projects, but treated as a strategic process with social, employment and skills implications.

The IEPTT Action Plan describes this scenario as one in which employee representatives share formal decision-making responsibilities with management in defining digitalisation and decarbonisation pathways. It includes joint committees, collective agreements integrating clauses on digitalisation and environmental transition, transparency mechanisms and participation in innovation governance.

In practice, this means that worker representatives are involved at an early stage when companies are considering major changes such as automated assembly lines, AI-based production planning, energy-efficiency investments, circular economy processes, new environmental reporting systems, or restructuring linked to low-carbon production. They can examine the expected effects on job profiles, employment levels, skill needs, work intensity, health and safety, equality and subcontracting.

This model allows companies to connect transformation with long-term workforce planning. Training is not introduced after technologies are installed, but planned alongside investment decisions. Restructuring is not treated only as a cost-reduction tool, but as a process requiring redeployment, reskilling and social safeguards. Environmental improvements are not imposed as additional responsibilities on workers, but discussed in relation to workload, safety and job design.

The Structured Co-Governance Model is especially useful where the company needs to manage complex and high-impact change. For example, if a machinery company plans to introduce robotics across several production lines, co-governance would require early information, joint assessment of job impacts, agreement on training pathways, monitoring of work intensity and transparent communication with employees. If the company is preparing for CSRD reporting, employee representatives can contribute to the social indicators, including training access, equality measures, occupational health and safety, and restructuring impacts.

5.3 Scenario 2: Partnership and Dialogue Model

The **Partnership and Dialogue Model** applies to enterprises and countries where formal social dialogue structures exist but are underused, inconsistent or weakly connected to strategic transformation decisions. This scenario is particularly relevant for many Central and Eastern European contexts identified in the IEPTT research, where trade unions or consultation bodies may exist, but participation is often late, limited or procedural.

The IEPTT Action Plan identifies this scenario as appropriate for countries with developing social dialogue institutions or mixed traditions of worker participation. It aims to strengthen participation through structured consultation, capacity-building and joint initiatives, even where formal co-decision rights are limited.

This model reflects the situation described in several national reports. The Polish report shows low awareness of the twin transition and weak employee influence, with 70% of respondents rating employee influence as weak. The Lithuanian report states that decisions on twin transformation are often made at management level, while social partners are informed after the fact and consultations are irregular or superficial. The Bulgarian report shows that employees are willing to participate but lack structured mechanisms and internal company forums.

The Partnership and Dialogue Model is built around regular, structured communication between management and worker representatives. It does not require full co-determination, but it does require that consultation becomes predictable, documented and connected to real decisions. The aim is to move from occasional information-sharing to systematic dialogue.

A company applying this model could establish a **Twin Transition Dialogue Platform** that meets regularly to discuss planned investments, digital tools, environmental measures, skill needs and workforce impacts. Participants may include management, HR, technical managers, trade union representatives, shop stewards, health and safety representatives and, where available, BLERs. The platform should not be purely symbolic. It should have an agreed agenda, access to relevant information, minutes of meetings, follow-up procedures and a mechanism for reporting back to workers.

In this scenario, the most important issues are awareness, trust and capacity. Many workers and representatives may not yet have enough knowledge of artificial intelligence, automation, circular economy, energy-efficiency measures or ESG reporting to engage confidently with management. At the same time, management may not be used to sharing strategic information early. The Partnership and Dialogue Model therefore requires capacity-building on both sides.

Training is a central element of this scenario. Worker representatives need training on digitalisation, green transition, information and consultation rights, collective bargaining and inclusion. Employers and managers need training on participatory change management, social dialogue, labour impacts of technology, and the benefits of early involvement. The IEPTT online

training courses for shop stewards and board-level employee representatives can be used as practical resources in this scenario.

This model is also suitable for introducing voluntary agreements or memoranda of understanding on twin transition. Such documents may define how workers will be informed, when consultations will take place, how training needs will be identified, how vulnerable groups will be included, and how the company will monitor social impacts. Even if legally binding co-decision is not available, agreed procedures can significantly improve transparency and trust.

5.4 Scenario 3: Participatory Learning and Consultation Model

The **Participatory Learning and Consultation Model** applies to enterprises and countries where formal participation structures are weak, absent or not yet trusted by workers and employers. This scenario is particularly relevant for small enterprises, candidate countries, regions with limited trade union presence, or companies where workers have rarely been involved in strategic discussions.

The IEPTT Action Plan presents this model as suitable for contexts with weak union presence and minimal formal dialogue structures. It focuses first on consultation, awareness and learning as stepping stones towards more formal participation.

This model responds directly to findings from countries such as Ukraine and Montenegro. The Ukrainian report shows very low awareness of the twin transition, limited company readiness, weak green transition preparedness and limited employee influence on decision-making. It also identifies interest in educational campaigns, regional hubs, pilot projects and stronger social dialogue. The Montenegrin report highlights the need for knowledge, awareness, financial support, policy coherence and inclusive dialogue between industry, employees and public institutions.

In this scenario, the first task is to create the conditions for meaningful participation. Workers cannot influence transformation if they do not understand the concepts, technologies, risks and rights involved. Employers cannot build trust if they communicate only after decisions have been made. Therefore, the Participatory Learning and Consultation Model begins with awareness-raising and basic communication.

At company level, this may include short information sessions on digital and green transition, simple explanations of planned changes, worker surveys, informal meetings, suggestion channels, pilot consultations and practical workshops. The aim is to build shared vocabulary and reduce fear. Workers should be able to ask basic questions: What technology is being introduced? Will my job change? Will training be available? Will working time change? How will safety be protected? Will temporary workers be included?

This model is also useful where trust is low. In such situations, formal consultation meetings may not immediately produce meaningful dialogue. Workers may be reluctant to speak, and management may view participation as a risk. Participatory learning creates a safer and more

gradual entry point. It allows both sides to learn how to exchange information and discuss problems constructively.

A company using this scenario could start with a **twin transition awareness workshop**, followed by a short anonymous survey on worker concerns and training needs. The results could then be discussed in a meeting with management, worker representatives and relevant technical staff. A small pilot group could be established to monitor one transformation project, such as the introduction of new digital documentation, energy monitoring or waste reduction procedures.

The Participatory Learning and Consultation Model should also include external support where possible. Regional training hubs, trade union federations, employer associations, universities, vocational education institutions and NGOs can help provide knowledge and facilitation. The IEPTT Final Report stresses the importance of education in both digital and green aspects of transition, describing it as both an obligation and a right of employees.

6. 6. Recommendations and Implementation Roadmap

6.1 Purpose of this section

The IEPTT research shows that the twin transition in the machinery sector is already underway, but that its social quality remains uneven. Digitalisation and decarbonisation are changing production systems, skills requirements, employment structures and company strategies. However, in many enterprises these changes are still managed primarily through top-down decision-making, weak consultation, fragmented training systems and limited worker influence.

The purpose of this section is to translate the IEPTT findings into practical recommendations for **employers**, **trade unions and worker representatives**, and **policymakers**. These recommendations are based on the project's comparative report, national reports, Action Plan and training content. They are intended to help stakeholders move from general awareness of the twin transition towards structured, participatory and socially responsible implementation.

6.2 Recommendations for employers

Employers play a decisive role in determining whether the twin transition is experienced by workers as an opportunity or as a threat. In the machinery sector, digital and green transformation often requires investment in automation, robotics, energy efficiency, environmental compliance, digital workflow systems, AI-supported planning and circular production methods. These investments can improve competitiveness, productivity and sustainability. However, if they are introduced without worker participation, they may also lead to insecurity, mistrust, work intensification and resistance.

The first recommendation for employers is to **inform and consult workers early**. Information should be shared before strategic decisions are finalised, not after implementation plans are already fixed. Workers' representatives should receive understandable information on the

purpose of planned changes, the technologies involved, expected employment impacts, training needs, health and safety implications, environmental objectives and timelines. Consultation should provide a real opportunity to discuss alternatives, identify risks and influence implementation.

The second recommendation is to **integrate worker participation into transformation planning**. Participation should not be treated as an administrative formality. It should be part of the company's change-management system. Employers should establish mechanisms such as joint transition committees, company-level dialogue platforms, training committees or project-based consultation groups. These mechanisms should include management, worker representatives, health and safety representatives, HR and, where relevant, board-level employee representatives.

The third recommendation is to **conduct systematic skill-gap assessments**. Digital and green transformation creates demand for new skills: automation operation, data interpretation, AI-supported systems, energy-efficiency monitoring, environmental reporting, circular economy practices, cybersecurity and hybrid digital-green competences. Employers should identify which roles will change, which workers need training, and which groups may be at risk of exclusion.

The fourth recommendation is to **ensure inclusive access to training**. Training should not be offered only to younger, permanent or already highly skilled employees. Older workers, women, workers with lower formal qualifications, persons with disabilities, migrant workers, temporary workers and subcontracted workers must not be excluded. Unequal access to training creates a hierarchy of employability and increases the risk that vulnerable groups will be left behind.

The fifth recommendation is to **assess the social and occupational impact of environmental measures**. Green transition may introduce new environmental procedures, energy-efficiency targets, waste-management systems and reporting obligations. These measures should be assessed not only for environmental benefits, but also for their effects on workload, job descriptions, working time, health and safety, and training needs. Environmental improvements should not shift hidden burdens onto workers.

Finally, employers should **document and monitor participation outcomes**. If workers raise concerns or propose improvements, the company should provide feedback. If training is promised, participation should be monitored by age, gender, contract type and job category. If a new technology is introduced, its effects on workload, safety and job content should be reviewed. Participation becomes credible only when it produces visible follow-up.

6.3 Recommendations for trade unions and worker representatives

Trade unions, shop stewards, works councils and board-level employee representatives have a central role in making the twin transition inclusive. The IEPTT research shows that workers need stronger representation, clearer information, more training and better channels for participation. At the same time, trade unions themselves often face capacity challenges,

including limited technical knowledge of digital and green technologies and insufficient resources for engagement.

The first recommendation for trade unions and worker representatives is to **build expertise on the twin transition**. Representatives do not need to become engineers or environmental consultants, but they do need enough knowledge to ask the right questions. They should understand the basics of automation, AI, digital monitoring, data systems, energy efficiency, circular economy, green skills, ESG reporting and environmental compliance. This knowledge strengthens their ability to participate in consultations and negotiate fair outcomes.

The second recommendation is to **request information proactively**. Worker representatives should not wait until decisions are announced. They should ask for information on planned investments, restructuring, digital systems, environmental measures, training plans, subcontracting and employment impacts. Requests should be concrete and documented. This is especially important in countries where information is often provided late or superficially.

The third recommendation is to **make training and reskilling a core bargaining and consultation priority**. The IEPTT national reports repeatedly identify skills gaps as a central challenge. The Polish report, for instance, highlights low awareness, partial company preparedness and the need for digital and hybrid training. The Ukrainian report also identifies digital, hybrid and green skills among the most needed training areas. Worker representatives should therefore focus on who receives training, when it is provided, whether it takes place during paid working time, whether it leads to recognised qualifications, and whether vulnerable groups are included.

The fourth recommendation is to **monitor the social effects of digitalisation**. Digital systems can improve production, but they can also increase surveillance, reduce autonomy, intensify work and create stress. Representatives should monitor how worker data is collected, how performance indicators are used, whether algorithmic decisions affect workers, and whether digital tools are compatible with health and safety standards.

The fifth recommendation is to **cooperate across representation levels**. Shop stewards understand daily working conditions. Trade unions negotiate collective interests. Works councils provide consultation channels. European Works Councils address transnational restructuring. Board-level employee representatives influence strategic decisions. These actors must communicate with each other. Without coordination, worker voice becomes fragmented.

The sixth recommendation is to **represent vulnerable groups deliberately**. Inclusive transition cannot rely only on general representation. Trade unions and worker representatives should actively identify whether older workers, women, migrant workers, subcontracted workers, temporary workers and persons with disabilities are included in training, consultation and mobility opportunities. If certain groups are absent from new skill pathways, the transition may reinforce existing inequalities.

Finally, trade unions should **move from reactive to strategic engagement**. The twin transition requires earlier involvement, stronger expertise and a longer-term view of skills, job design, employment security and participation. This means not only responding to redundancies or disputes, but shaping transformation plans before they are implemented.

6.4 Recommendations for policymakers

Policymakers at national, regional and European levels have a crucial role in creating the institutional and financial conditions for inclusive twin transition. The IEPTT research shows that many companies and social partners lack stable support structures. SMEs often lack resources for training and digital or green investment. Trade unions often lack technical capacity. Public policies are sometimes fragmented across ministries and programmes. Without coherent policy support, participation remains dependent on isolated projects rather than stable systems.

The first recommendation for policymakers is to **strengthen social dialogue structures**. National and regional Twin Transition Councils or working groups should bring together trade unions, employer organisations, public authorities, education providers and industry experts. These bodies should discuss sectoral transformation pathways, skill needs, employment risks, training systems and support measures. The IEPTT Action Plan recommends establishing such working groups under existing social dialogue councils, involving ministries responsible for labour, industry and climate policy.

The second recommendation is to **integrate social partners into industrial, climate and digital policy planning**. Policies on decarbonisation, Industry 4.0, AI, energy efficiency and circular economy should include sections on worker participation, training and social impact. Social partners should not be consulted only after policies are drafted. They should participate in policy design, implementation and evaluation.

The third recommendation is to **support sectoral training alliances**. The machinery sector requires digital, green and hybrid skills. Training systems should be developed through cooperation between employers, trade unions, vocational education institutions, universities, regional authorities and public employment services. Training should be modular, accessible and certified where possible. It should also be adapted to workers with different ages, educational backgrounds and employment statuses.

The fourth recommendation is to **link financial support to participation and social conditions**. Public funds, EU funds and national incentives for digital and green investments should encourage companies to involve workers, conduct training, assess employment impacts and respect collective agreements. Financial support should not focus only on equipment, infrastructure or technology. It should also support human capital, dialogue and inclusive implementation.

The fifth recommendation is to **create monitoring indicators for participation**. Public institutions should monitor not only emissions reductions or digital investment, but also social

indicators. These may include the number of companies with active transition committees, number of workers trained, participation of vulnerable groups in training, frequency of consultation meetings, collective agreements covering transition issues, and reported worker influence on decisions.

The sixth recommendation is to **support SMEs and peripheral regions**. The IEPTT reports show that smaller companies and less developed regions often lag behind due to limited financial and human capacity. Public policy should provide technical assistance, advisory services, shared training resources, regional hubs and accessible funding mechanisms. Without such support, the twin transition may deepen regional and company-size inequalities.

Finally, policymakers should **promote deliberative and inclusive governance**. The IEPTT Final Report emphasises the role of deliberative democracy in improving the legitimacy and fairness of twin transition policies. This requires spaces where workers, employers, experts and public authorities can reason together about transformation goals, risks and responsibilities.

7. 7. Training and Capacity-Building Resources

7.1 Stakeholders' Online Courses – IEPTT project

The IEPTT project includes two structured online courses: one for shop stewards and company-level trade union representatives, and one for Board-Level Employee Representatives (BLERs). The shop stewards' course focuses on understanding the twin transition, workplace representation, information and consultation rights, collective bargaining, inclusion of vulnerable groups, and practical tools for consultation, communication and reskilling. The BLERs' course addresses corporate transformation, board-level rights and duties, participation in strategy and restructuring, labour-rights risks in changing employment models, ESG/CSRD-related social sustainability, ethical AI, equality and just transition governance. Both courses should be linked to quizzes, templates and practical exercises.

7.2 External learning sources

Below you will find **a practical catalogue of online training resources and educational platforms** that machinery sector employees can use to improve their **digital and green skills**.

1. MOOC and international platforms with courses on digital and green transformation

DigiSkills for All – Digital Skills MOOC

A free online course available through the iMooX platform. The course covers **basic digital skills** that can be useful in the context of working in modern industry. DigiSkills for All – MOOC on digital skills

The Future Work 4's MOOC – skills for the future

A set of online courses on **digital transformation, green skills, innovation and social competences**. The courses integrate theoretical materials and interactive exercises. Future Work 4's MOOC – digital & green skills

Green You(th) Employability – green skills and the circular economy

The platform offers courses related to **the circular economy, digital transformation and green skills**, useful for those developing the skills of the future. Green You(th) Employability – green & digital courses

2. Popular global training platforms with courses on digital and green transition
(often offer materials in English, but some courses have Polish subtitles or translations; registration required)

Google Digital Garage

The platform offers **free digital courses**, including tools related to digital skills, digital marketing, data analysis and IT basics. Google Digital Garage – online digital training

FutureLearn

A global MOOC platform with courses on **technology, change management, efficiency and sustainable development**. FutureLearn – online courses on transformation and digital skills

Udemy

A global marketplace for online courses, where you can find courses on **digital transformation, data analysis, cybersecurity, IoT and other technical skills**. Udemy

ITCILO (International Training Institute of the ILO)

An extensive database of online and classroom courses in **digital skills, organisational change, sustainable economy and skills development**, also useful for managers. ITCILO – international development courses

7.3 Guides

Below is **a collection of manuals, guides, handbooks and publications** on **the green or digital transition (twin transition)** — with an emphasis on materials **available online** that are useful for **employees, social partners, trade unions and employee organisations**. The list includes resources **in Polish and English/EU languages**, including publications by trade union federations and international institutes.

EU and European institution publications on the twin transition

1) 'Unionisation and the Twin Transition' — analysis of good practices in employee engagement

A European Parliament publication analysing **the impact of the digital and green transitions on the labour market**, the role of social dialogue, employee participation and good practices in collective bargaining. It includes examples and recommendations.
• **Unionisation and the twin transition – good practices (PDF)**

Guides and manuals related to the transition (practical tools)

2) Toolkit: How to Enhance Social Dialogue on the Twin Transition — a tool for social partners

A toolkit developed as part of the **Make Twin Transition** project (UNI Europa) to support **social partners and trade unions** in dialogue activities related to the twin transition — action planning, impact assessment, roadmap and scenario development.
• **Make Twin Transition – social dialogue toolkit (PDF)**

3) Green Workplaces Guide – ETUC guide for trade unions

A practical guide prepared by **the European Trade Union Confederation (ETUC)** for trade union representatives and activists in workplaces, helping to implement **green strategies in the workplace**. It contains tools and practices for environmental transition.
• **ETUC Green Workplaces – Guide for unions (PDF)**

Educational resources and general guides

4) EU guidelines: Green and digital transformation in Erasmus+, ECS

A set of guidelines developed by EU bodies on **implementing digital and green strategies in educational and social programmes** (Erasmus+, European Solidarity Corps). They can serve as inspiration for training and participatory activities.
• **EU guidelines – green and digital transition (FRSE)**

5) "Preparing for the twin transition through the development of adult competences" – article and recommendations

An article/popular science guide on the EPALE platform describing the role **of adult skills development** in the twin transition – it integrates the context of education, skills and the improvement of employee skills.
• **Preparing for the twin transition through skills development**

7.4 Online materials

Combining the knowledge base with social media — where and how to share content about the twin transition

Social media can serve as discussion and information platforms supporting the implementation of the IEPTT project. Their task is **to distribute knowledge, encourage discussion, promote educational materials and collect opinions from metal sector employees**. Properly planned communication will increase the visibility of the project and facilitate the engagement of participants.

European social partners and institutions worth following

ETUC – European Trade Union Confederation
• https://twitter.com/etuc_ces
• https://www.linkedin.com/company/etuc/
• https://www.facebook.com/ETUC.CES

IndustriALL Europe
• https://twitter.com/industriAll_EU
• https://www.linkedin.com/company/industriall-europe/
•https://www.facebook.com/industriallEU

IndustriALL Global Union
- https://twitter.com/industriall_gu
- https://www.linkedin.com/company/industriall-global-union/
- https://www.facebook.com/industriall.union

IndustriEnergi (examples of transformation from Norway)
- https://twitter.com/IndustriEnergi
- https://www.facebook.com/industrienergi.no

ETUI – European Trade Union Institute (transition reports)
- https://twitter.com/etui_org
- https://www.linkedin.com/company/european-trade-union-institute/
- https://www.facebook.com/ETUI.org

Trade and industry organisations

Eurofer – European Steel Association (green steel)
- https://twitter.com/eurofer_eu
- https://www.linkedin.com/company/eurofer/

European Aluminium
- https://twitter.com/AluminiumEU
- https://www.linkedin.com/company/europeanaluminium/

WindEurope (wind energy – linked to the metals market)
- https://twitter.com/WindEurope
- https://www.linkedin.com/company/windeurope/

Hydrogen Europe (hydrogen in industry)
- https://twitter.com/HydrogenEurope
- https://www.linkedin.com/company/hydrogen-europe/

Clean Steel Partnership (green steel projects)
- https://twitter.com/CleanSteelEU
- https://www.linkedin.com/company/clean-steel-partnership/

Digital technologies for industry (Industry 4.0)

Digital Europe
- https://twitter.com/DIGITALEUROPE
- https://www.linkedin.com/company/digital-europe/

EIT Manufacturing
- https://twitter.com/EITManufacturing
- https://www.linkedin.com/company/eit-manufacturing/
- https://www.youtube.com/c/EITManufacturing

European Digital Skills & Jobs Platform
- https://twitter.com/DigitalSkillsEU
- https://www.linkedin.com/company/eu-digital-skills-and-jobs-platform/

AI & Industry (Artificial Intelligence Committee)
- https://twitter.com/DigitalEU

8. 8. FAQ on Inclusive Twin Transition

This section provides short, practical answers to common questions from workers, shop stewards, board-level employee representatives, trade unions, employers' representatives and trainers. The purpose is to clarify key concepts and support informed dialogue at company and sectoral level.

1. What is the twin transition?

The **twin transition** means the combined process of **digital transformation** and **green transformation**. Digital transformation includes automation, robotics, artificial intelligence, data-based production systems, digital monitoring, smart sensors and new forms of work organisation. Green transformation includes energy efficiency, emissions reduction, sustainable materials, circular economy practices, waste reduction and environmental reporting.

In the machinery sector, these two processes are closely connected. Digital tools can help companies reduce energy consumption, improve resource efficiency and monitor environmental performance, while environmental requirements often push companies to modernise production technologies and data systems. The IEPTT Final Report defines the twin transition as the interaction between digitalisation and greening of economies, with structural impacts on enterprises, workers and society.

2. What does "inclusive twin transition" mean?

An **inclusive twin transition** means that workers and their representatives are involved in shaping digital and green changes, rather than being informed only after decisions have already been made. Inclusion means that transformation should respect workers' rights, provide access to training, protect vulnerable groups and create genuine opportunities for information, consultation and participation.

The IEPTT project links inclusive transition to **deliberative democracy** — dialogue based on mutual respect, reasoned discussion and involvement of those affected by decisions. This means that transformation should be developed **with workers**, not simply imposed on them.

3. Does the twin transition mean job losses?

Not automatically. The twin transition changes jobs, tasks and skill requirements, but it does not have to lead directly to job losses. In many cases, automation or green technologies transform

existing roles rather than eliminate them. For example, production workers may move from direct machine operation to supervision of automated systems, quality control, maintenance, data interpretation or energy-efficiency monitoring.

However, job losses may occur if companies use digitalisation mainly as a cost-cutting strategy or fail to plan reskilling and redeployment. The IEPTT research shows that workers are often uncertain whether new technologies will support or replace their work, especially where information and consultation are weak. This is why employment impact assessments, early dialogue and training plans are essential.

4. Will machines and AI replace workers?

Machines and AI can replace certain repetitive, dangerous or physically demanding tasks, but they do not remove the need for human knowledge. Workers remain essential for supervision, maintenance, troubleshooting, safety control, quality judgement, process improvement and decision-making in unexpected situations.

The main risk is not simply replacement by machines, but **poorly managed technological change**. If workers are not trained, if job profiles are not updated, or if digital systems are introduced without consultation, automation can create insecurity and resistance. If workers are involved and trained, automation can improve safety, reduce physical strain and create more skilled roles.

5. What new skills will workers need?

Workers in the machinery sector will increasingly need **digital, green and hybrid skills**. Digital skills include the ability to work with automated systems, digital panels, production data, sensors, maintenance software, AI-supported tools and cybersecurity procedures. Green skills include energy efficiency, waste reduction, circular economy practices, emissions monitoring and environmental safety. Hybrid skills combine both, for example using digital systems to monitor energy consumption or reduce material waste.

The IEPTT national reports repeatedly identify skills gaps as a major barrier. The Lithuanian report stresses the need for upskilling and reskilling in digital skills, green technologies and automation, while the Ukrainian report identifies digital and hybrid skills as priority training needs.

6. When should workers be informed about planned changes?

Workers and their representatives should be informed **before decisions are finalised**, not only after technologies have been purchased or restructuring plans approved. Information must be early enough, clear enough and detailed enough to allow representatives to assess the likely impact on employment, skills, working time, health and safety, equality and work organisation.

Information provided too late is not meaningful participation. Early information allows workers' representatives to prepare questions, gather worker feedback and propose alternatives or safeguards.

7. What is the difference between information and consultation?

Information means that the employer provides relevant data and explanations about planned or ongoing changes. This may include investment plans, restructuring proposals, new technologies, training needs, staffing impacts and environmental measures.

Consultation goes further. It means an exchange of views between the employer and workers' representatives before final decisions are taken. Consultation should allow representatives to ask questions, present concerns, suggest alternatives and influence implementation. A meeting where management only announces a decision already taken is not genuine consultation.

8. What is participation?

Participation means that workers and their representatives can influence decisions affecting their working lives. It can take many forms: direct worker feedback, trade union representation, works councils, health and safety committees, European Works Councils, board-level employee representation or joint transition committees.

Participation is broader than information and consultation. It includes involvement in designing, implementing and monitoring changes. In the twin transition, participation may concern automation, AI tools, restructuring, training systems, environmental measures, subcontracting, working time and equality policies.

9. Why is social dialogue important for the twin transition?

Social dialogue helps transform uncertainty into cooperation. It allows employers and worker representatives to discuss the consequences of digital and green change, identify risks early, negotiate training, and prevent conflict. The IEPTT Action Plan shows that weak social dialogue and top-down decision-making are common barriers across the national reports.

When social dialogue is strong, transformation is more likely to be understood, accepted and implemented effectively. When it is weak, workers may experience change as imposed, threatening or unfair.

10. What role can trade unions play?

Trade unions can help workers understand transition processes, request information from employers, participate in consultations, negotiate collective agreements, monitor training access and protect vulnerable groups. They can also raise awareness about digital and green changes and support workers in adapting to new requirements.

However, the IEPTT research also shows that trade unions themselves may need additional capacity, especially technical knowledge of digitalisation, automation, AI and environmental frameworks. The Action Plan therefore stresses capacity building for social partners as a key condition for inclusive transition.

11. What is the role of shop stewards?

Shop stewards operate close to the workplace. They gather workers' concerns, monitor working conditions, ask management for information, participate in consultations and help communicate decisions in understandable language. During the twin transition, they are particularly important because they can identify practical impacts that may not be visible at management level.

For example, a new digital monitoring system may appear efficient in strategic planning, but shop stewards can detect whether it increases stress, reduces autonomy, creates unfair performance pressure or excludes older workers from adaptation.

12. What is board-level employee representation?

Board-level employee representation means that workers have representatives on company boards or supervisory boards. These representatives participate in strategic discussions about investment, restructuring, workforce planning, sustainability, digitalisation and long-term company development.

In the twin transition, board-level employee representatives can ensure that digital and green investment decisions consider workforce impacts, training needs, equality, employment security, ESG reporting and social sustainability. Their role complements shop stewards and trade unions: shop stewards understand everyday workplace impacts, while board-level representatives bring worker perspectives into strategic governance.

13. How can workers participate in digitalisation projects?

Workers should / can participate by contributing practical knowledge before new technologies are introduced. They can identify risks, suggest improvements, test new systems, report training needs and assess how digital tools affect workload and safety.

A participatory digitalisation process should include early information, worker feedback, pilot testing, training before implementation and review after introduction. Workers should also be informed about what data digital systems collect, how it will be used, and whether it may influence performance evaluation, pay or disciplinary procedures.

14. How can green transition affect working conditions?

Green transition can improve working conditions by reducing pollution, waste, energy waste and exposure to harmful processes. It can also create new skills and jobs connected to energy management, environmental monitoring and sustainable production.

However, if poorly managed, it can also add new responsibilities without recognition. Workers may be asked to follow stricter procedures, complete additional documentation, meet environmental targets or operate new equipment without sufficient training. Environmental measures should therefore be assessed for their impact on workload, safety, working time and job descriptions.

15. What are the main risks for vulnerable groups?

The twin transition may deepen existing inequalities. Older workers may face difficulties if digital training is rushed or inaccessible. Women may be excluded from technical or engineering roles if training and promotion systems are informal or biased. Migrant workers, temporary workers and subcontracted workers may be excluded from consultation and training. Persons with disabilities may face barriers if new digital tools or workplaces are not accessible.

The IEPTT Final Report stresses that inclusion is central to a fair transition and that vulnerable groups must not be left behind.



IEPTT

IMPROVING EMPLOYEE
PARTICIPATION IN TWIN TRANSITION



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