EXECUTIVE SUMMARY: WORKFORCE & POPULATION STRATEGIES FOR THE TRANSITION TO RENEWABLE ENERGY SYSTEMS

Overview of Key Findings / Executive Summary

MENTOR to IMPACT

About Mentor to Impact: Mentor to Impact is a nonprofit organisation that strategically works to secure labour and skills for the transition to renewable energy systems. This is achieved through thought leadership, research, projects and collaborations across the world.

Written by Sara Petrycer,
Astrid A. Toftegaard & Emma Donde
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Executive Summary

This document highlights the most important findings from the report “Workforce and Population Strategies for the Transition to Renewable Energy Systems”. The purpose of this report is to investigate whether we can reasonably support the argument that a lack of labor will become a significant obstacle to the transition to renewable energy systems – a so-called implementation gap. Additionally, the purpose has been, if we see a real expectation that the lack of labor will constitute a barrier to the energy transition, to indicate whether and how Philanthropy can play a role.

This work has been done through extensive literary and data studies across various platforms, organisations and writers. Further, we have conducted expert interviews across Brazil, Europe, India, Kenya and Tanzania and talked to a range of experts to clarify or get a better understanding of our findings. As for all future studies and forecasts, it is impossible to predict the future, but the documentation gathered in this report paints quite a clear picture.

A Skilled Workforce for the Transition to Renewable Energy Systems

Shortage of skilled labour is bound to emerge as a big implementation gap to the transition to renewable energy systems

As the energy transition accelerates, the shortage of skilled labour and competencies is going to become a major implementation gap. Addressing this gap is crucial for an effective transition implementation, as we see both current and anticipated skill shortages in renewable energy projects pose investment risks, driving up costs and hindering effectiveness.

Projections on job changes vary widely, influenced by sectors assessed, policy assumptions, technological adoption, and methodology. Despite uncertainties, a net increase in employment is anticipated, but disparities across occupations and regions may exacerbate social inequalities.

We already see that the current demand for skilled workers exceeds supply, hindering progress in energy-related projects, particularly in installation and repair work, construction, battery storage, and electric vehicles. Shortages are expected to worsen with increased climate policies and investments. Construction and investments in renewable energy are expected to continue rising, sustaining demand for labour over an extended period. Although labour demand may taper off during the maintenance phase, ongoing reinvestment and technological development ensure a continuous cycle of employment opportunities, especially among subcontractors.

Various forecasts suggest an increase in jobs as the transition to renewable energy systems unfolds, supporting the argument for its role in driving job growth. However, addressing skill shortages, labour dynamics, and regional disparities is crucial for navigating the transition effectively and ensuring its benefits extend across societies.

Small and Medium-sized Enterprises (SMEs) face unique challenges in ensuring a skilled workforce due to limited resources, emphasising the need for reskilling and upskilling initiatives.

Also, the scarcity of STEM skills poses a notable challenge, creating a disparity between employer demands and workforce qualifications, especially crucial in the green sectors driven by technological advancements.

In conclusion, we can see that the lack of qualified labour is already and will increasingly constitute an implementation gap in the years to come.

What are the major obstacles with regards to skills for the transition to renewable energy systems?
Lack of skills for the energy transition is a two-dimensional problem. One of them being the demographic development and the other lack and mismatch of skills.

When we look at demographic development, we see that both the Global South and the Global North are affected by this. In the Global North the demographic development is characterised by a decreasing youth population, a decrease in the workforce and an increase in the median age. This means that the lack of skills is not only a problem regarding the quality of the availability of skills but also a quantitative problem. As the workforce is set to decline in the coming years it will become increasingly difficult for companies to recruit staff.

To overcome this, it is necessary to address the problem by implementing policies to increase the available workforce. One way this can be achieved is to secure a broader participation from the population, e.g. by increasing participation of women in critical sectors and including vulnerable groups or people in transition between jobs or due to migration in the workforce. Further, reports show that digitalisation is expected to create more jobs than it will replace, however concerns have been raised of the opposite.

In the Global South, we see large countries and regions such as India and Sub-Saharan Africa currently close to, or within a couple of decades of, becoming very likely to enter the demographic dividend, where the proportion of the working-age population exceeds the proportion of the non-working population (e.g., children and the elderly).

Whether or not the demographic shift results in a demographic dividend is however closely linked to governmental prioritisation in areas such as education, health, governance, and the economy. In India, there is an increasing demand for skills for the energy transition; however, at the same time, many people in the labour force lack employability, and this relates to both university students and vocational and unskilled labour.

Another major issue is accessibility to training. This issue covers both the lack of trainers and access to training for vocational workers, unskilled labour, and academia. There is a recognized need for support and guidance in training of trainers for the energy transition. Challenges include financing adequate training of trainers and tailoring programs to specific industry sectors.

To address the skills mismatch, larger companies create their own training programs to enhance their employees' skills and education. However, this approach does not seem to mitigate the general lack and mismatch of skills, nor does it expand the recruitment pool among vocational workers. Furthermore, this

strategy does not positively impact the public school system; on the contrary, it appears to have the opposite effect, further entrenching silo thinking within the educational system across various sectors.

Moreover, the effectiveness of the educational system in supplying skilled workers is heavily reliant on government prioritisation and funding. Vital updates are required in VET (Vocational Education and Training) programs to incorporate technological advancements and cater to the demands of the transition to renewable energy systems, while challenges persist in financing and tailoring programs for specific industry needs.

Further, there is a need for universities to meet companies' escalating demand for renewable energy sector expertise, addressing discrepancies between taught academic skills and employer expectations to enhance graduates' employability. This problem is particularly, but not exclusively, pertinent to India.

Lastly, we see silo thinking at both the political level (horizontal level) and in the cooperation within the ecosystem (vertical level, including market creators, companies, educational institutions, and organisations). Hence, we see that national, institutional, and intergovernmental collaborations play a vital role in setting strategic guidelines for the transition to renewable energy systems, ensuring stability, predictability, and reducing scepticism towards future reduction paths. Further collaboration between educational institutions, industries, and governments is essential to align educational programs with industry needs and bridge the skills gap effectively.

Identifying six Bottlenecks

Through our work, we have identified six bottlenecks. They all carry weight in themselves, but they are also intertwined and carry synergies between them.

The six bottlenecks are:

- *1) Lack of labour as an implementation gap in the transition to renewable energy systems*: To ensure a successful energy transition, the Global North must address workforce shortages and demographic decline, while the Global South needs targeted education and skill development for its growing workforce.

- *2) Increased gender disparity in the green labour market*: Without addressing gender disparity, the transition to renewable energy systems risks perpetuating existing social and economic inequalities, thereby impeding its progress. Women's contributions and leadership in climate solutions are crucial for ensuring effective and inclusive climate action. Furthermore, females make up half of the workforce and are therefore unavoidable when addressing skills and labour shortages.

- *3) People in transition from declining industries and migration*: Support for the energy transition is closely tied to ensuring economic security for workers from declining industries and developing skills for migrants, as socio-economic instability can undermine public support for climate initiatives.

- *4) Lack of skills posing as an implementation gap*: The successful implementation of the energy transition relies on addressing workforce challenges and reducing skills mismatch, as the lack of skills presents a significant barrier to realising the full potential of investments in renewable energy and other green technologies.

- *5) Shortage of trainers and green VET institutions*: A critical shortage of qualified trainers for the transition to renewable energy systems, particularly in vocational schools, poses a significant obstacle to effective training and upskilling required for the transition, further amplifying the growing demand for skilled workers.

- *6) Silos across administrations and sectors*: Breaking down silos in both horizontal cooperation (silo mentality in policymaking) and vertical cooperation (cross-sector collaboration) is vital for the energy transition. These issues intertwine, as silo mentality can also exist within cross-sector efforts and vice versa, leading to fragmented strategies and inefficiencies. Overcoming these barriers ensures integrated environmental, economic, and social strategies to close mismatch gaps and develop a skilled, adaptable workforce fit for the transition to renewable energy systems.

Synergies and Negative Up-stream Effects

To illustrate the major obstacles within the implementation gap in labour for the energy transition, the role of the central stakeholders and the connection between the six bottlenecks, the Synergy Model has been developed (see Figure 2).

The model specifies the role of the stakeholders in relation to each of the major obstacles, linking this model to the Quadrature of Competencies (see Figure 1). The Quadrature defines the most important stakeholders in the development of the (renewable energy) labour market and systemizes the shared effort between workforce & population, educational institutions, companies and market creators.

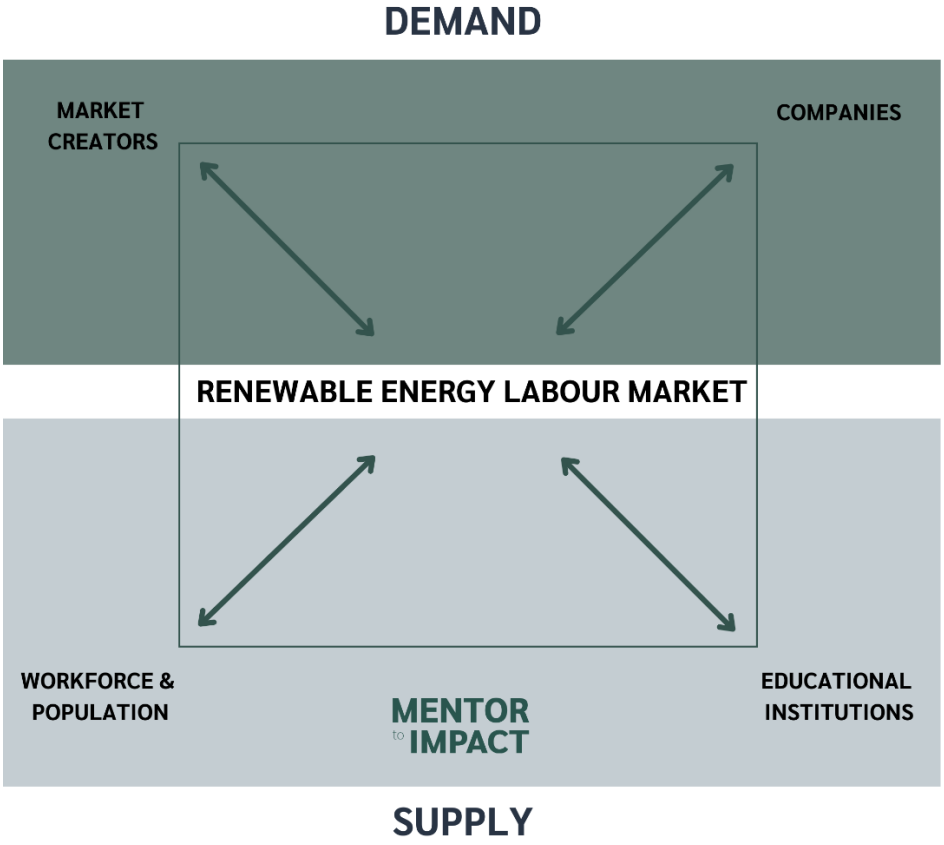

Figure 1: *Quadrature of Competencies.*

The model demonstrates how “Lack of Qualified Workforce” is an issue closely linked to the population in general and the workforce specifically (Bottleneck 1, 2, 3 and 4). The educational institutions are the most important stakeholders for the “Limited Accessibility to Training”, since the educational institutions main mission is to ensure quality training and education for the population through dedicated and competent teachers (Bottleneck 5). Market creators, such as government officials, and companies form the rules, regulation and general practices for the job market and educational system. It is therefore especially important to ensure good collaboration and prevent silo thinking for these stakeholders (Bottleneck 6).

Furthermore, we see that the cooperation between companies and educational institutions is one of the most fundamental prerequisites for a balanced labour market and closing mismatch gaps. Without continuous understanding and dialogue between these two stakeholders, it is simply not possible to equip the workforce with the skills needed to implement the necessary technologies. Additionally, we see that digital technologies are developing exponentially, making reskilling and up-qualification even more important. Also, the involvement of social partners in this dialogue and cooperation ensures a more sustainable and long-lasting dialogue.

As an example, female participation in the green workforce is of vital importance for several reasons. One of the most dominant reasons is that women constitute approximately potentially 50% of the workforce. Increasing female participation in the green workforce requires a targeted approach, including training of trainers, ensuring accessibility to training, and providing clear signals from both the market and the government. Schools need to tailor their education to the demand side. If inclusive company and governmental gender policies are not clear, schools are less likely to adjust their curricula and teaching methods to accommodate females.

Additionally, underinvestment and lack of political prioritisation are gradually undermining the educational system. When companies do not cooperate with educational institutions and authorities, focus is lost in educational and employment policies.
On the other hand, we see a clear correlated effect when there is strong collaboration at both vertical and horizontal levels, and when policy and development steps are made with consideration of their probable long-term consequences.

We have identified a clear tendency, that when there is a linear effect between the supply of labour and market opportunities, companies are more likely to invest in labour. However, where the connection is not direct, such as in the case of women's roles, vulnerable groups, and technocrats' competencies, companies generally play a more passive role. Additionally, labour development has a long-time horizon, and if companies only act when the need directly arises, the development time can be very long. At the same time, the development time for teachers and trainers is even longer, as it is often people who have worked directly in the field who become vocational teachers. This must therefore be added to an already long-time horizon.

Furthermore, we can see that the lack of knowledge and competences among technocrats, civil servants, and government officials poses a problem regarding creating clear pathways for the market to follow. This becomes especially apparent in licitation processes and at the vertical level, which then becomes a barrier further down the supply chain. Throughout our work, we have detected clear deficiencies at the implementation, educational, and policy levels.

Another important aspect of the Synergy model is the placement of the three main issues on a spectrum ranging from downstream to upstream. This means that issues relating to “Silo Thinking and Lack of Collaboration,” placed upstream on the Synergy model, have consequences for “Limited Accessibility to Training” and ultimately the “Lack of a Qualified Workforce.”

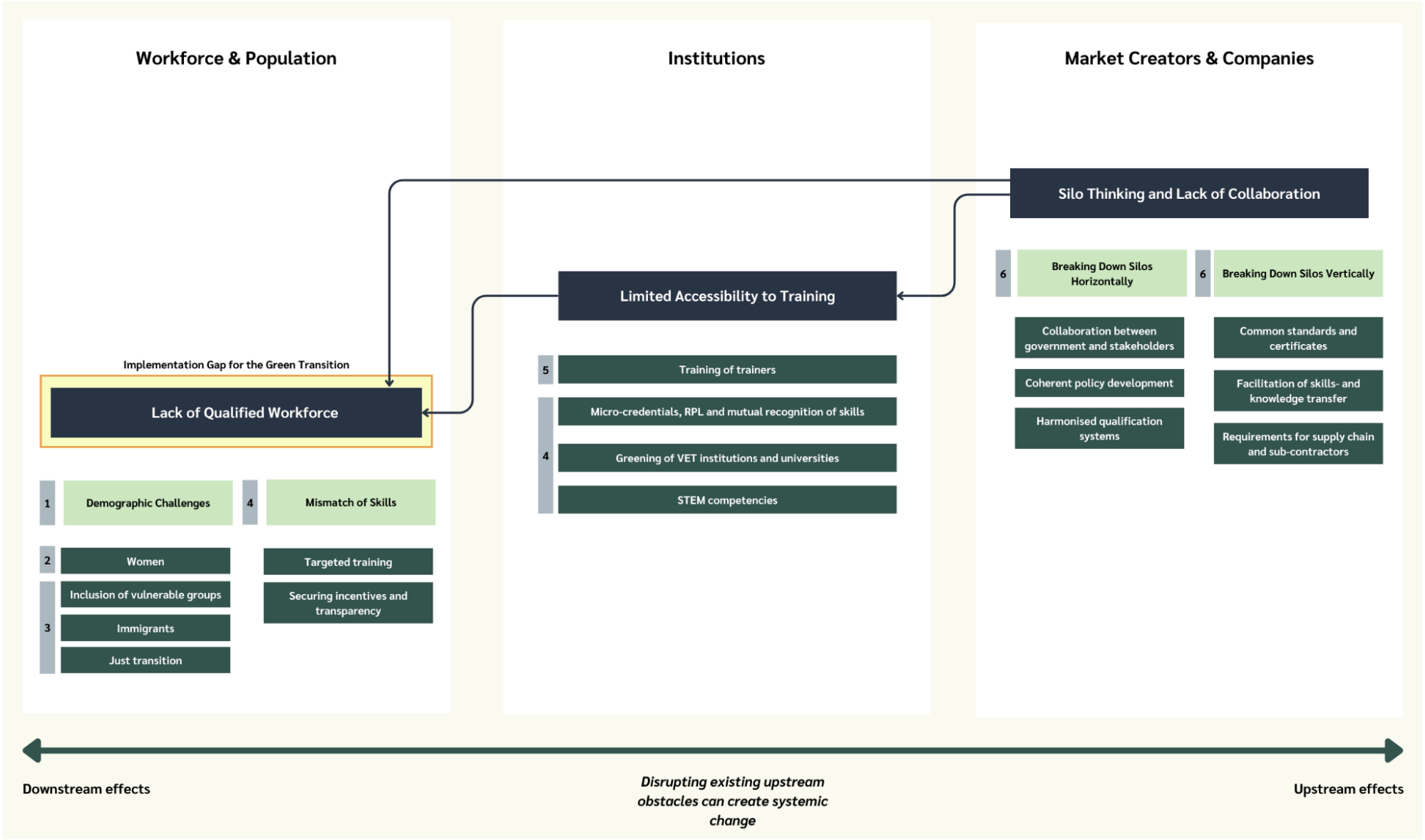

Figure 2: *Synergy Model*

Call for Action

In conclusion, there is a clear role for macro level financing and strategic pathways in addressing the labour gap in the transition to renewable energy systems. Closing the mismatch and skills gap in the energy transition requires a multi-stakeholder approach. However, these stakeholders often have different priorities and bottom lines. Despite increasing recognition that the lack of skills for the energy transition is a major implementation gap, the development of relevant skills is not being prioritised at the centre of business strategy or policy development.

As mentioned above, if there is a linear effect between the supply of labour and market opportunities, companies are more likely to invest in skills development, especially among their own employees. However, when the connection is not direct, such as in the case of women's roles, vulnerable groups, and technocrats' competencies, companies generally play a more passive role. This is because the development paths are longer and more uncertain. Additionally, many companies have an economic bottom line as their primary success criteria, whereas what is needed is systemic impact and change, which requires macro level financing and strategy. Furthermore, in many countries, there is little to no action being taken to secure skills for the energy transition, largely due to a lack of prioritisation in the upstream supply chain.

In economic policy, there is often a focus on increasing labour supply in general, whereas ensuring that the workforce actually possesses the skills demanded by employers is often neglected. Imbalances in the labour market can have serious economic consequences, as structural imbalances will lead to lower employment and lower productivity. Nevertheless, the degree of match between the workforce's skills and employers' demand is not included in most conventional economic models.

The Quadrature of Competences model has been developed to systemise the necessary collaboration across sectors and stakeholders in the development of a balanced labour market. The model represents a structured approach to identify and implement strategic interventions. This approach leverages the collective expertise of stakeholders, ensuring that initiatives are not only effective but also scalable and widely adoptable, thereby maximising their impact.

Thus, we see a significant role for strategic interventions on a macro level to bridge silos and connect stakeholders across systems, leveraging systemic change to enhance skills and empowerment in the workforce, and disrupting unintentional negative upstream effects. A clear example on this would be partnerships to develop certified micro credentials and/or standards to secure efficient upskilling and inclusiveness policies.

To disrupt existing upstream deficiencies, it is necessary to step in where the market will not naturally go due to the lack of a direct linear effect. This could, for example, involve focusing on women, refugees, and other vulnerable groups, ensuring they have access to the necessary training and opportunities in the green workforce. Additionally, it is important to address areas where there is a general lack of skills, such as the competence to conduct green procurement processes among technocrats, disrupting silo thinking, and training of trainers.

There is a clear need for fostering collaboration between educational institutions, government bodies, and the private sector to understand the market development and demand as the market and technologies evolve. Establishing platforms for continuous learning and knowledge exchange can further enhance the capabilities of individuals and organisations involved in the transition to renewable energy systems. However, these platforms need to be engaging, easily accessible, action oriented and directly implementable to be successful.