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Employment effects of green policies in the Philippines Summary for Policymakers



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Policy Note

Employment effects of green policies in the Philippines Estimations based on the Green Philippines Employment Projection Model

July 2019

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Introduction

In 2016, the Philippines enacted a landmark law that aims to encourage “enterprises to generate and sustain green jobs.” In order to do so, the Green Jobs Act (Republic Act 10771) provides new tax incentives¹ in addition to those already provided in earlier environment- and investment-related laws². While the environmental impacts of encouraging sustainable production technologies may be straightforward, how such policies may affect the broader economy, in general, and the labor market, in particular, remains as an open arena for debate.

This *Policy Note* weighs in on this on-going discussion by providing some indications of the potential impacts of transitioning to a low-carbon, environmentally sustainable economy on aggregate employment demand. It identifies the likely winners and losers from “greening” the Philippine economy and highlights the role of productivity differences within and among sectors on the future of jobs.

An estimate of the green economy

To date, there is no globally accepted definition of what operationally constitutes the green economy. In a low-carbon perspective, a green economy may mean zero-emission production, although it may range to the less stringent criteria of having “acceptable (emission) levels” that meet climate change policy targets (Frankhauser, et. al., 2017). Other definitions have been proposed. The *United Nations [UN] System of Environmental and Economic Accounting* (UN SEEA, et. al., 2014), for instance, defines green industries as those that perform either (i) environmental protection activities, or (ii) resource management activities. The International Labor Organization [ILO] (2013), builds on the SEEA guidelines and defines employment in the Environmental Goods and Service Sector (EGSS) in both environmental protection and resource management and delineates between those that produce environmental goods and services mainly for consumption outside the producing unit, i.e., “green by product”, and those where the primary use is inside the production unit, i.e., “green by process”. In the Philippines, the Green Jobs Act defines green economy to be “low-carbon and resource-efficient”.

In this *Policy Note*, we loosely follow the SEEA and ILO definition which distinguishes the greener part of the economy with proxies for environmental goods and services produced for the sales outside the establishment (by product or service output) and for the use within the establishment (by production process). Importantly, the ILO definition of Green Jobs combines the green production structure with the concept of Decent Work, the social dimension of the production structure. Due to data limitations and its focus on the economy wide employment effects of green policies, this research does not assess the Decent Work dimension. More specifically, the silviculture, waste management and materials recovery, public transportation, organic agriculture, and renewable energy sectors are treated as

¹ This include (i) tax deductions for skills training and research development expenses and (ii) tax- and duty-free importation of capital goods that will be used in green jobs.

² For example, this includes Republic Acts 5186, 10068, 10121.

“green-by-product” sectors. That is, 100% of the silviculture, waste, public transport is considered as green. Renewable energy and agriculture are split from the International Standard Classification of Industries (ISIC) and proxied by the geographic location of establishments and producers, which are known to produce renewable energy and organic produce. On the other hand, the “green-by-process” sectors are proxied by identifying the upper ten percentile of production units that are most efficient in using energy and water resources by unit of output produced and within every industry in the country. Based on this operational definition, the share of the green economy comprises about a fifth of the country’s Gross Value-Added (GVA) in 2016 (Abrigo, et. al., 2018). This is similar to the share estimated by Frankhauser, et. al. (2017) using an alternative expenditure-side approach.

It is important to stress that the results, as presented below, are dependent on the way the greener sectors are approximated here. Due to lack of primary survey data of the ‘real green economy’ the above proxies are used to specify the green sectors. This raises some concerns. For example, it is found that the green specifications in terms of the ten percentile of energy and resource efficient industries are highly correlated with higher labour productivity, notably in the service sector. That is, the most resource efficient companies also have the highest labour productivity. It follows that when the greener economy grows faster, as in our scenario below, those industries with the highest labour productivity also grow fastest, generating less employment as compared to a business as usual scenario. In fact, one may interpret such results not as a green economy strategy but simply as an accelerated economic development strategy: An emerging economy, such as the Philippines, will, with each unit of GDP increase, become more resource and labour efficient at the same time. This explains the results: Industries get more productive as they use less resources in terms of labour and energy. While this describes a natural economic growth path, one interested in only the employment effects of green policies, should single out labour and resource productivity effects.

Table 1 summarizes the contribution of the green and conventional sectors to the country’s GVA, gross output, and employment in 2016. It also presents the average output per worker in each major sector of the Philippine economy.

The green economy contributed about PhP 2.7 trillion to the country’s total GVA in 2016. A large proportion of this comes from the services sector (73%), followed by the industry sector (25%). Within services, the green subsector (the 10 percent most energy and water efficient) comprises more than a fifth of the sectors’ GVA, while green industry shares about 15 percent of the industry sector’s total GVA. Green agriculture, on the other hand, contributes only about 0.1 PhP trillion in 2016 – i.e., only less than five percent of the whole agriculture sector and only 2.5 percent of the entire green economy. During the same year, worldwide retail sales of organic agricultural products reached more than PhP5 trillion (Willer and Lernoud, 2017), thus providing great market potentials for future expansion of the domestic green agriculture sector.

The above estimated contribution of the green economy to the GDP captures only payments for factors of production, i.e., for labor and capital. An important element which is not considered here is the role of imports. Economic activities that rely on a high share of imports will create less indirect employment. In fact, intermediate products sourced from value chains outside the country, will not generate indirect jobs in supplying industries within the country. As conventional industries have different value chains and import requirements as compared to green industries, extending the current analysis to include imports would give a more complete picture.

In terms of employment, about 6.9 million Filipinos or roughly 17 percent of all persons employed in 2016 are working in the here specified green sectors. About 60 percent of them (4.3 million) are in services, while the rest are split between industry (1.4 million) and agriculture (1.3 million). By intensity of employment greening, the chance of finding workers contributing towards greening the industry and services are almost the same: One green worker for every five workers in each of these

sectors. In agriculture, on the other hand, the rate is much lower at about one green sector worker in every ten agriculture workers.

As discussed above, an important element in the green sector specification is the correlation between resource and labour productivity. When labour productivity is proxied by employment over gross output and the green and conventional sectors are compared, we can see that workers in the green sectors have different productivity ratios (see table 1).

Table 1. Conventional and Green Sectors: Philippines, 2016

	Green	Conventional	All Sectors
A. Gross Value-Added (Current PhP Trillions)			
Agriculture	0.1	1.4	1.5
Industry	0.7	4.0	4.6
Services	2.0	6.4	8.4
Total	2.7	11.8	14.5
B. Gross Output (Current PhP Trillions)			
Agriculture	0.1	2.6	2.7
Industry	1.2	12.9	14.1
Services	3.3	8.7	12.0
Total	4.7	24.1	28.8
C. Employed (Millions)			
Agriculture	1.3	9.9	11.2
Industry	1.4	5.9	7.3
Services	4.3	18.2	22.5
Total	6.9	34.0	41.0
D. Output per Worker (Current PhP Thousands)			
Agriculture	107.8	257.9	240.8
Industry	869.2	2,194.4	1,938.7
Services	775.5	475.9	532.7
Total	672.9	709.3	703.1

a – less than 0.05.

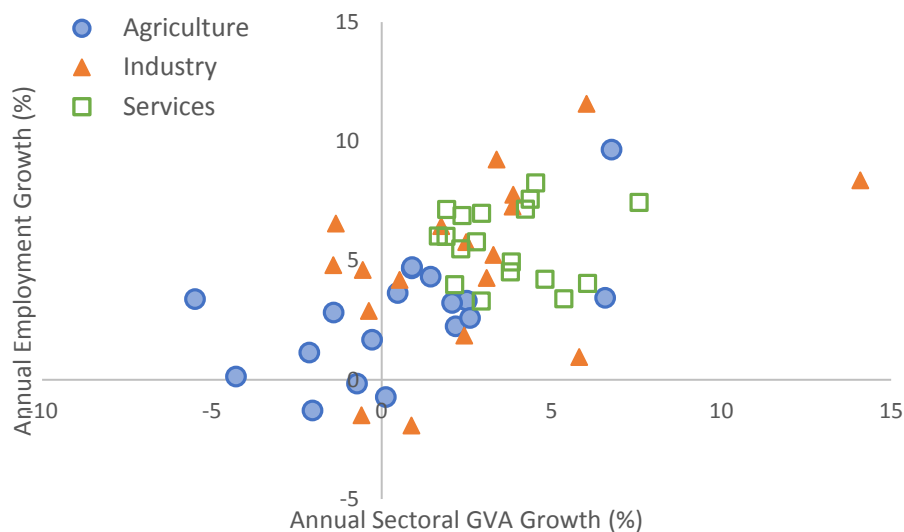
Source: Authors' estimates. See Abrigo, e.t al. (2018) for estimation details.

In both agriculture and industry, workers in the conventional subsector are more than twice more productive relative to those employed in the green subsectors. This hints at the higher capital and resource intensity of the conventional sectors and the higher labour intensity in the green subsectors and its value chains. For example, organic agriculture seems to rely more on manual labour and indirect employment in, for example organic fertilizer production, than on chemical and capital intense inputs. The longer local value chain and production structure of the green subsectors make them attractive for employment creation. Workers in the green services sector, on the other hand, are about 1.6 times more productive, hinting at higher energy efficiency technology and higher labour productivity in the green service sector. Reduced energy cost per unit of output means those industries are more productive than those in the conventional counterpart.

Growth and employment

Despite concerns on jobless growth in the Philippines (Pitterle and Zhang, 2014), estimates of sectoral employment and GVA growth in recent years show a strong positive correlation (Figure 1).³ These numbers, however, may understate the potential impact of economic growth. More specifically, the simple correlation only captures the direct association between GVA growth and employment *within* the same sector. Because sectors are inter-related through their production processes, i.e., the output in one sector is used as inputs in other sectors, an increase in production in one sector induces more production in other sectors. This ultimately affects the overall demand for workers.

Figure 1. Historical Sectoral Gross Value-Added Growth and Employment Growth, 2000-2016



In order to provide a fuller assessment of the potential impact of growing the green economy on employment demand, we developed the Green Philippine Employment Projections Model (Green PEPM). It brings together information on the backward and forward linkages among sectors, as well as historical trends and future projections of GVA and productivity, to be able to simulate the future trajectory of employment demand.

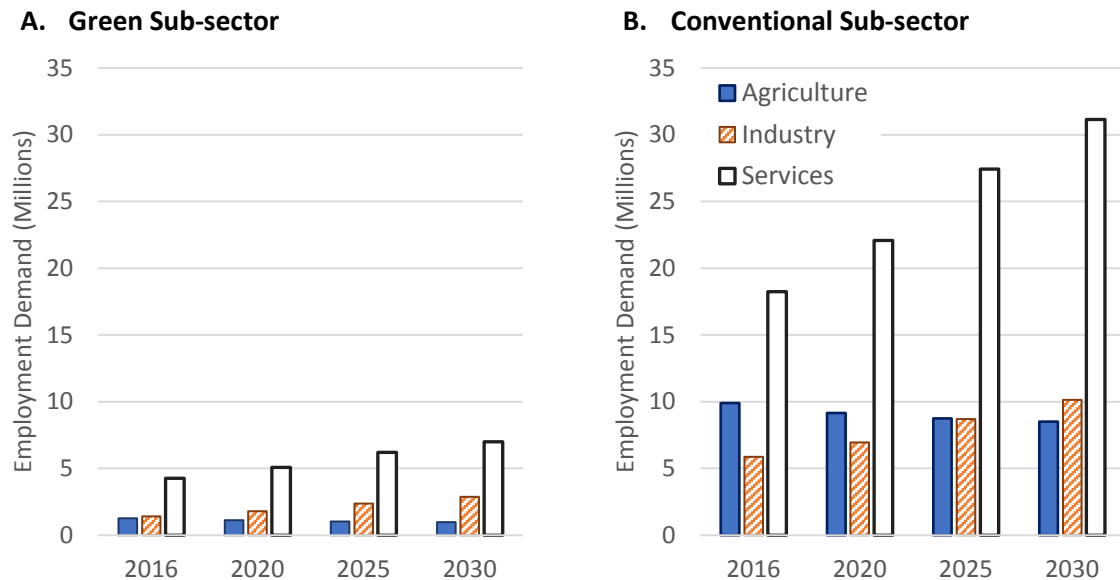
In Figure 2, we present employment demand projections for a reference scenario. Assuming that the sectoral growth targets of the Philippine Development Plan [PDP] are achieved (National Economic and Development Authority, 2017) the green and conventional subsectors of agriculture, industry and services grow equally up to 2030. Beyond 2022, the economy-wide annual growth is projected to approach 4.1 percent by 2030. In this specific scenario, we assumed that the green and conventional sectors grow at the same rate, and that the historical growth in output-per-worker converges to two percent by 2040.

As may be expected, growing the economy expands the demand for workers. Between 2016 and 2030, the projection points to an annual growth in employment demand of about 2.8 percent. That is equivalent to around 1.4 million new positions every year under this optimistic growth path. Employment in the green economy is projected to require an additional 3.9 million workers by 2030, or about another half (56.2%) of what it currently employs. The conventional sector will continue to

³ See Albert (2014) for a more detailed discussion.

dominate the labor market under this scenario, requiring 49.8 million workers in 2030 from 34 million in 2016. These figures include the combined direct effects of growth in each economic sector and its indirect effects on other sectors of the economy. If all these employment positions will be filled, the country's employment to population ratio will increase by six percentage points by 2030 from about 60 percent in 2016.

Figure 2. Projected Employment Demand: PDP Scenario



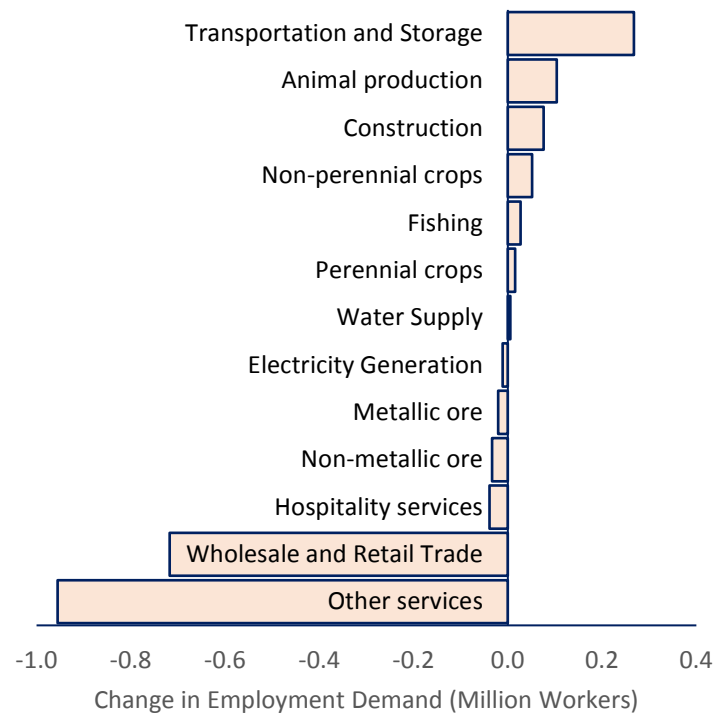
Source: Authors' calculations. See Abrigo, et. al. (2018) for details.

Winners and losers from greening

As the country transitions to a low-carbon environment-friendly economy, some employment positions, such as coal miners and incinerator operators, may no longer be required. Others may need to be transformed, such as drivers operating busses that switch from diesel to electric. New employment positions may need to be created if the demand for environmental good and services, from the green industries, increases. Still, many employment positions are expected to remain the same, but using more resource-efficient technology. This may require some on the job training and up-skilling. Growing the green economy therefore poses potentials for growing the labor market. But, as discussed, higher resource and labour productivity also means economic growth which requires less labour per unit of output.

Figure 3 shows an alternative all-out greening scenario. The projected change in employment demand relative to the reference PDP scenario is depicted, assuming that *all* the green subsectors grow twice faster than their conventional counterparts. Based on this alternative sectoral growth trajectory, the biggest winners will be in the service sector as it is already today the biggest employer. Employment will notably grow in transportation, which will require an additional 0.3 million workers on top of the reference employment demand, agriculture (0.2 million additional workers), and construction (0.1 million workers). However, it is expected that employment demand will be lower by 1.7 million workers in the services sector as compared to the reference scenario, excluding transportation. This is due to the fact that the green service industry, as specified here, highly correlates with and shows a 1.6 times higher labour productivity. Overall, under this much aggressive greening scenario, the labor market is projected to generate less employment of about 1.2 million positions relative to when the green and conventional sectors grow at the same rate.

Figure 3. Projected Change in Employment Demand due to All-out Greening: Philippines, 2030

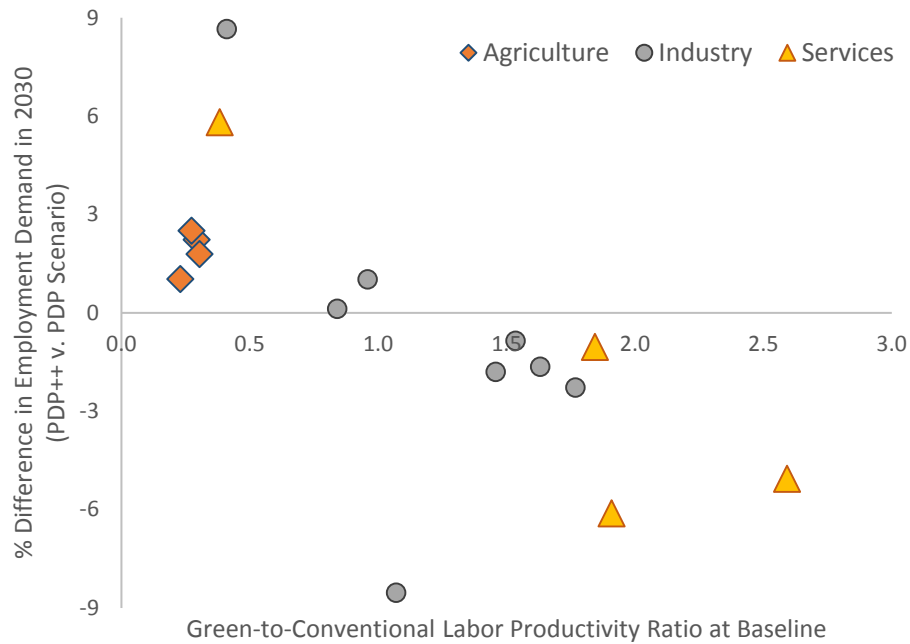


Source: Authors' calculations. See Abrigo, et. al. (2018) for details.

As explained, the accelerated greening of the economy, as approximated here, can be seen as a natural and accelerated economic development process which, by producing more output and value with less factors of production (labour, capital and natural resources), will also require a lower number of workers as compared to a reference scenario. In Figure 4, we show that industries, where labour in the green subsector is significantly more productive than in the conventional subsector, will generate less employment. This is not unexpected since switching technologies that results in more productive workers, such as in the case of services, naturally would require less workers to produce the same amount of output.

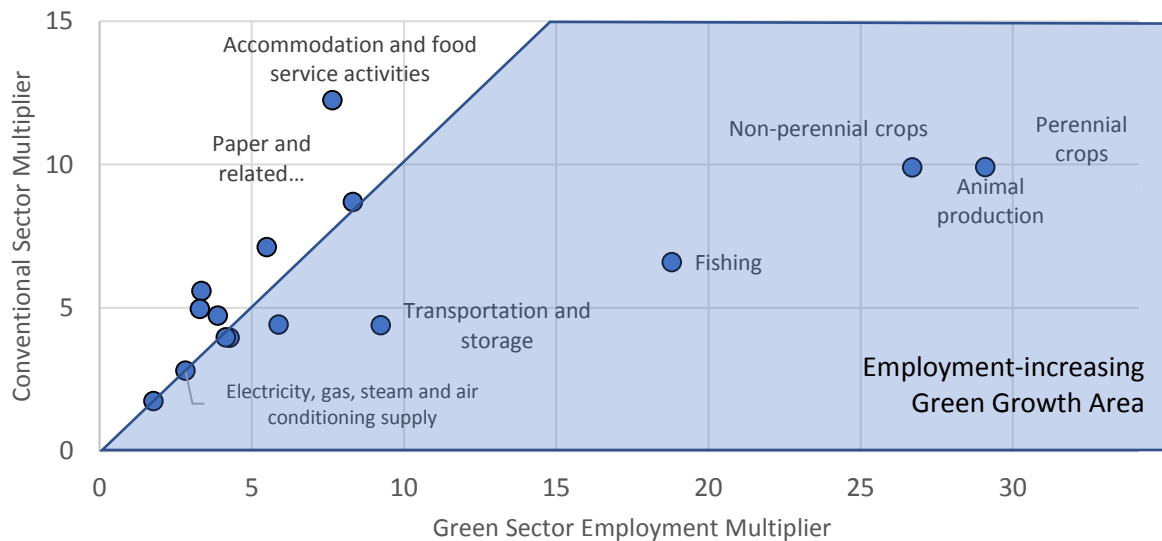
If the goal is to have the optimal growth in employment possible from greening, it is necessary to compare how much an additional peso-worth of growth translates to employment demand in the conventional and in the green sectors. Growing the green economy through industries where the green sector has higher "employment multiplier" is expected to result in net job creation. Estimates of these multipliers, however, should be calculated at the finest industry level as they depend on specific contexts about the economy and may change through time, and should therefore be regularly updated. In Figure 5, we present the employment multipliers calculated for 2016, and show the area where sectors are likely to benefit from greening in terms of greater employment.

Figure 4. Labor productivity and projected employment demand impact of greening



Source: Authors' calculations. See Abrigo, et. al. (2018) for details.

Figure 5. Green v. Conventional Employment Multipliers, 2016



Source: Authors' calculations. See Abrigo, et. al. (2018) for details.

Policy Options

Although the country may experience slower growth in employment from greening certain industries (notably services), this is part of an accelerated economic development process where less labour and resources are required per unit of GDP. Industries, such as green agriculture and green manufacturing seem to rely on longer local supply chains and intermediate inputs as compared to conventional

agriculture and manufacturing. Such longer and more localized supply chains in the green sub-sector generate more indirect employment and stimulate additional economic activity. These green industries, because of their higher indirect effect, will also accelerate broader economic development while being even more employment rich. Three major findings emerge:

First, the majority of green service industries are not only more resource productive but also more labour productive. Hence, economic growth will happen faster in a green service economy scenario, as productivity increases faster compared to a conventional service growth scenario. Those that are able to find employment in the highly productive green sectors are expected to earn higher wages but are required to have gained the right skills.

Second, those who may be displaced by greening may be directed to other sectors that need them as the overall employment growth is positive in the green scenarios. This of course requires effective policies, plans and actions on the part of government, and the active contribution of the private sector.

Third, green manufacturing and green agriculture seem to rely on longer value chains with a higher degree of domestic content, creating more indirect and total job opportunities as compared to a conventional growth scenario.

With the opportunities and challenges posed by greening the economy, some policy suggestions are in order.

Strengthen social safety net programs. With the projected displacement of workers in polluting industries, either temporarily or permanently, pension and unemployment insurance programs and country wide social protection systems provide an important safeguard for families from falling into poverty. However, its design must recognize not just the requirements from transitioning to a low-carbon economy, but other emerging issues as well, such as population ageing and the automation of work. While these issues may not be directly linked with greening, it poses risks on the sustainability and effectiveness of social protection systems.

Re-orient education and skills training. In an ever-evolving and highly dynamic globalized labor market which is turning towards high efficient, circular and low-carbon technologies, re-orientation of technical, vocational education systems is necessary. To take advantage of an accelerated green service economy skills training systems must be geared towards the right occupational competencies.

Explore alternative financing schemes. In addition of tax incentive to promote green jobs, a pointed approach would be to also address the causes of why firms do not invest in greener technologies or choose to produce green outputs. This may include, for instance, limited access to credit markets, or uncertainties surrounding production technology. Further, as highlighted in the projections, some sectors are more likely than others to benefit jobs from greening, such as organic agriculture and green manufacturing, at least under their current conditions. It may be prudent to direct more greening incentives toward these “winnable” sectors.

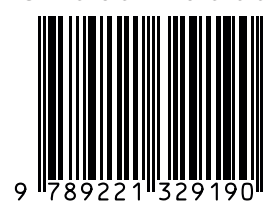
Burden shifting – fiscal green tax reform. Finally, it is important to recognize the negative social externalities that polluting industries and fossil fuel based production processes create. Low environmental taxes encourages pollution. At the same time, burdening enterprises and workers with income and profit taxes discourages employment creation and entrepreneurship. A green fiscal tax reform, taxing environmental pollution while alleviating taxes on employment and income has the potential for a win-win situation for higher job creation, resource efficiency and reduced pollution.

Just Transition Policy Framework. A comprehensive policy approach is warranted to combine the above policy options into a coherent green package. It should be guided by social dialogue to gain social support and maximize positive and minimize negative outcomes. ILO’s Just Transition Guidelines provide for such a comprehensive approach (ILO 2015).

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