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## **The Coal Transition: Mitigating Social and Labor Impacts**

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Mitigating Social and Labor Impacts**

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**Abstract**

Realizing the objectives of the Paris Agreement on climate change will necessitate a timely transition of the global energy system out of coal, but evidence from Europe, China, and the United States shows that the coal transition can lead to massive job losses. This paper develops a comprehensive policy approach to assist affected workers and communities. Based on a conceptual framework that distinguishes between pre-layoff planning, pre-layoff assistance and post-layoff assistance, it discusses the main instruments for mitigating social and labor impacts, in particular income support and active labor market policies. In addition, it considers the institutional context, the dynamics of change, and implementation issues. The paper argues that while challenges resulting from the coal transition should not be minimized, the sound management of job displacements can contribute to mitigating the social consequences, strengthen morale and productivity, and improve the efficiency of structural change.

**JEL Codes:** J63, J65, Q38

**Keywords:** Coal transition; job displacements; income support; active labor market policies

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## 1 Introduction

Arguably, the “stabilisation of the climate system in line with the Paris Agreement on climate change is impossible without the timely phase out of unabated coal from the global energy system” (Caldecott et al. 2017a, p.4). However, the transition out of coal can lead to massive job displacements. Large-scale restructuring in the coal sectors of Eastern and Western Europe, China, and the United States have resulted in hundreds of thousands of coal workers losing their jobs.<sup>1</sup> These figures do not even include the spillover job losses in industries in the coal value chain or those job losses associated with the goods and services that support the coal workers’ livelihoods, such as local food markets or clothing vendors. Yet the social impacts of the transition out of coal can be even broader, particularly in those situations where coal companies own or finance social infrastructure, such as health clinics or primary schools. In the most extreme case, a coal mine is at the center of a mono-industry town where the entire economy revolves around it and is therefore essentially doomed once the coal mine closes.

While many countries are faced with new challenges resulting from the coal transition and there is an urgent need to achieve a “just transition for all” to realize the objectives of the Paris Agreement on climate change, large-scale job losses are not themselves a new phenomenon.<sup>2</sup> There have been many episodes where economic restructuring, changing trade patterns, major cyclical downturns, and even natural disasters have eliminated a substantial number of jobs and in the process created serious dislocations for workers and their families, firms, and communities. These large-scale job losses have significant social and psychological as well as economic consequences (cf. von Wachter et al., 2009). Mass layoffs’ effects on variables such as mental health and even mortality also can be significant. Moreover, Farber (1997) and von Wachter et

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<sup>1</sup> For example, during the 1980s employment in coal mines in the United Kingdom fell from 237,000 to 49,000 while in Poland during the 1990s it fell from 380,000 to 150,000 and in the United States between 1980 and 2015 from 220,000 to 65,000 (cf. Caldecott et al. 2017a). While UNFCC (2016) notes that Germany had 753,000 coal sector jobs in the late 1950s but only 33,500 in 2014, according to Caldecott et al. (2017b, p.27) it is “thought that around a quarter of the 2.8 million total workers in [China’s] state-owned coal mining companies were laid-off” between the late 1990s and early 2000s.

<sup>2</sup> As detailed in World Bank (2017, p. 57), “[t]he Just Transition for All concept builds on the International Trade Union Confederation’s (ITUC) concept of a ‘Just Transition.’ (...) The ‘Just Transition for All’ complements this concept by also envisioning the reform of labor and social policy and institutions to ease the disruption faced by a wide range of people directly and indirectly affected by the transition toward clean energy, as well as to support them in their post-transition jobs and lives.”

al. (2009) show that some types of workers—for instance, women, older workers and the less-educated—may suffer disproportionate costs from job displacements (cf. Box 1 for a discussion of gender aspects of coal mine closure). In addition to that, large-scale job displacements resulting from coal mine closure tend to be geographically concentrated, so they can have significant impacts on entire communities and local and regional economies can be left with few economic opportunities (cf. vom Berge and Schmillen, 2015); laid-off workers often lack the skills or geographic proximity to easily transfer to sectors that are growing; and providing adequate support can be expensive. Because of the personal and social costs involved in a large-scale job loss, governments have implemented a range of measures to financially compensate displaced workers, assist them in finding re-employment, or both. Careful diagnosis and programming based on international experience can create opportunities in even the direst situation. They can mitigate the costs of large-scale labor displacement and support workers in finding productive re-employment that will have long-run benefits, both for the individuals involved and for the broader economy.

*Box 1 – Gender Aspects of Coal Mine Closures*

Mining sector restructuring affects the welfare of women in multiple ways – through loss of coal industry employment, increased burden of domestic responsibilities when men lose their employment, intra-household tensions, and the impact of migration induced by mine closure. For example, Poland Miners’ Social Package in response to the 1998-2001 mine closures initially only covered underground workers, who were only men. A stakeholder workshop in 2001 revealed that women’s employment had been directly affected by the mine closure, but they did not benefit from the package since they were surface, rather than underground, workers. In response, a new social package was introduced that included 3.6 months’ severance payments for surface workers. The Romanian mine restructure during 2002-2005 found that nearly 50 percent of laid-off workers were female. Further, women likely fill many of the spillover jobs that serve coal mine producers and their families. Women tend to be over-represented in wholesale and retail, owning small shop, small restaurant, and performing various other services. Thus, their job loss may be overlooked if the focus is only on coal producers. Women also respond differently to job loss and redeployment. Sometimes, women tend to be comfortable with a larger set of job options while men commonly identify with a more limited set of job options. For example, in response to economic shocks in Argentina, women more easily moved into alternative activities to supplement household incomes while men were frequently willing only to take jobs in their own narrow occupation. Also, women tend to be responsive to a wider range of active labor market policies: according to impact evaluations, their post-training employment probabilities and wage gains exceed those of men, they have a higher incidence of usage of employment services, and they are a better credit risk than men when borrowing to start their own small businesses.

*Sources: Authors based on Geldstein (1999), Attanasio et al. (2015) and Strongman (2017)*

History has shown that effective management of the social and labor aspects of coal mine closures can make the difference between a smooth and a conflict-filled, and perhaps failed, transition (cf. Caldecott et al. 2017a). While proven instruments exist that can mitigate the social and labor consequences of coal mine closure, even many of the most advanced countries have failed in managing the coal transition. The key question is how to ameliorate the short-term negative impact of adjustment on individual workers, while at the same time recognizing that jobs are created by private sector investment and a growing economy, not by social protection and labor services. Lessons from past coal transitions, as well as lessons from managing the social and labor aspects of economic and natural shocks affecting various sectors, can answer this question and provide clear guidance to prepare for a new wave of transition away from coal. As emphasized by UNFCCC (2016, p. 20), “[i]n many ways the transition to a green economy will pose challenges similar to those of earlier transitions caused by technological revolutions, globalization and rapid changes in world markets.”

This paper summarizes experiences and best practices for local and national governments to support structural change and assist workers and communities affected by large-scale job displacements, including coal transitions. To this end, it considers a wide range of past adjustment episodes caused by either the coal transition or a multitude of other shocks affecting various sectors that resulted in significant worker dislocation to develop a comprehensive policy approach to address the job displacements that are bound to arise from future industry-wide shocks or realignments, including future coal transitions.

By incorporating lessons learned from a multitude of shocks affecting various sectors, this paper contributes to the emerging literature on managing social and labor impacts of the coal transition, with an emphasis on developing country contexts. This literature has already summarized some important lessons learned from past coal transitions (or sometimes energy transitions). For example, OECD (2016) reviews the experiences of the closure of thermal power plants in Canada, Italy, Australia and elsewhere as well of a nuclear power plant in California while Caldecott et al. (2017a) summarize lessons from detailed case studies of the coal transition in the Czech Republic, the Netherlands, Poland, Spain, the United Kingdom, and the Appalachian region of the United States. Similarly, Sheldon et al. (2018) focus on the coal sector in Australia,

the Netherlands, the United Kingdom, the United States and the Ruhr region in Germany (also covered by Galgoczi 2014) as well as steelworks in Australia and Singapore's move from low-wage low-tech to high-wage high-tech manufacturing in the late 1970s.<sup>3</sup> Another key contribution of this paper is its predominant focus on developing and emerging economies and these countries' specific challenges – such as comparatively low technical capacity and limited fiscal space. In contrast, most of the relevant literature has dealt with the coal transition in developed countries.

The rest of this paper is structured as follows: Section 2 introduces a conceptual framework for the processes of divestiture of labor, irrespective of whether one considers the coal sector or other industries. Section 3 discusses the main instruments for mitigating social and labor impacts during pre-layoff planning, pre-layoff assistance, and post-layoff assistance. Section 4 elaborates on considerations regarding select implementation issues including the institutional and local context and the dynamics of change. Section 5 concludes.

## **2 Conceptual framework**

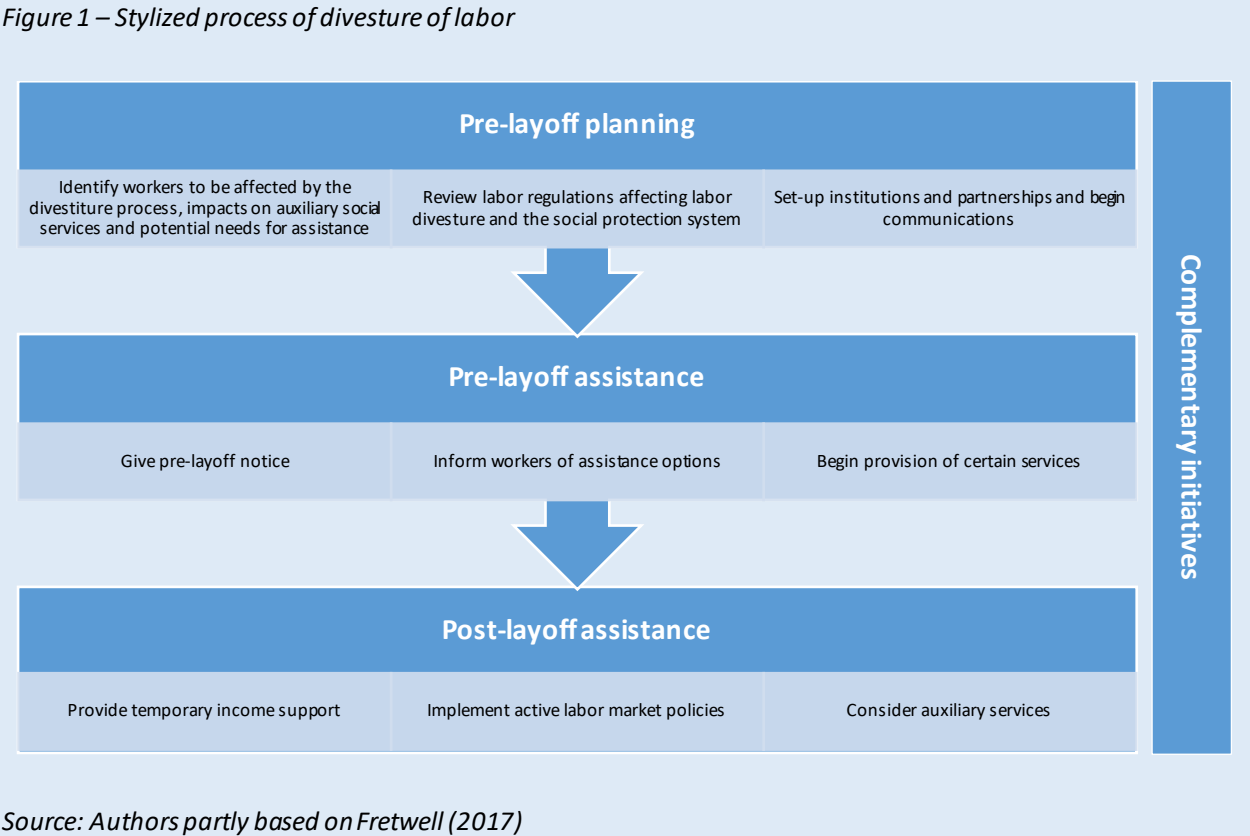
Whether one considers the coal sector or other industries, following Fretwell (2017), processes of divestiture of labor can be grouped into three major phases: Pre-layoff planning, pre-layoff assistance and post-layoff assistance. Pre-layoff planning is the process of (i) collecting information to identify the extent and nature of the social and labor challenge (i.e., identification of workers to be affected by divestiture decisions, impacts on auxiliary social services, and assistance needs); (ii) reviewing relevant labor regulations and the social protection system; and (iii) setting up of institutions and partnerships to support workers' transitions and beginning a communications campaign. Pre-layoff assistance is intended to prepare workers for impending layoffs and includes (i) giving notice of dismissal to affected workers; (ii) providing information regarding assistance options; and (iii) implementing services such as worker profiling and skill audits to understand individual skills and assistance needs, as well as job counseling and placement services. Post-layoff assistance is the most active and costly phase and encompasses

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<sup>3</sup> On the policy level, ILO (2015) has issued a set of non-binding guidelines for a just transition covering social protection and active labor market policies, among other areas, while UNFCCC (2016) has issued a technical paper that provides guidance on how to approach the issue of a just transition at the national level.



the provision of temporary income support and implementation of active labor market policies to individual displaced workers and potentially a wider group of beneficiaries. If necessary, the phase also involves the deployment of social programs that help ensure that displaced workers and their families have continued access to health, education, and similar services.



The three phases in the process of divestiture of labor should ideally be addressed in a sequential fashion. However, in practice they may overlap. In some cases, the first two phases may not be addressed in-depth if layoffs begin quickly with little forward planning, which can in particular occur in cases of a sudden shock to a sector: Caldecott et al. (2017a) emphasizes that coal mine closures often happen quickly and without forewarning, leaving stakeholders little choice but to catch up with reality (also cf. Section 4 for a discussion of the dynamics of change). In parallel to the three phases of labor divestiture, complementary initiatives beyond the realm of social protection and labor initiatives for directly displaced workers and their families should also

be considered – such as efforts to promote local economic development and environmental rehabilitation (cf. Figure 1 for a stylized depiction of the process of divestiture of labor).

### **3 Instruments for mitigating social and labor impacts**

#### **3.1 Pre-layoff planning**

The first step in the process of labor divestiture is to identify which workers will lose their jobs. Very often divestiture comprises the total closure of a coal mine or other plant, but there are also instances of partial closures. In the case of a partial closure, after having defined the new business plans regarding markets, products and volumes, the organization and utilization of labor must be defined to reach the desired efficiency. In order for the coal mine to become at least as productive as its competitors, organization and employment levels should be compared with the situation in competitor mines to provide an indication of staffing needs. Next, an analysis of the skills and competencies of the existing personnel must be performed. Whenever possible, personnel meeting the new requirements should be selected from the existing staff. It might be possible to retrain some staff, including educating managers to undertake new management responsibilities. In some cases, new staff or managers with experience from more productive and competitive mines may need to be hired. Surplus personnel will be laid off.

Spillover job losses must be considered. Coal mines tend to form part of complex value chains involving suppliers (service providers, machine builders, etc.) and clients (transport companies, power plants, cement factories etc.). Pre-layoff planning should look beyond the immediately affected enterprises and include an analysis of possible job losses in companies in the coal mines' value chains, which may or may not be geographically located close to the mines. There may also be spillover effects that are not tied to the coal production process itself but on jobs that serve workers or firms that are part of this production process. For example, local shopkeepers who sell goods and services to coal workers may also be at risk of losing their livelihoods. An analysis of spillover jobs losses will be particularly pertinent in the case of mono-industry towns where all economic activities are centered on a coal mine.

A good understanding of the auxiliary social services that will be affected by coal mine closures is also necessary. In some countries, in particular in formerly centrally planned

economies, various social services, such as schools, houses, health services, and water and energy supply systems, are sometimes run by companies in the coal sector. In other countries, such as the United States, the financing of health care and pension benefits can be closely tied to a specific job (cf. Caldecott et al. 2017a for a discussion of how a large number of coal workers in Appalachia lost their health care coverage and pension funds when their employers declared bankruptcy). In the divestiture process, the responsibility for providing and/or financing social services must often be shifted to local or other government authorities. If this process is not prepared in time, social services might shut down, leaving unemployed workers particularly vulnerable.

Given the information about direct and indirect jobs loss as well as about threats to auxiliary social services, it is possible to sketch the potential demand for pre-layoff and post-layoff assistance during the pre-layoff planning phase. The identification of assistance needs has several dimensions. First, one needs to collect information about the general characteristics of the personnel that has to be laid off – skill level, occupation, age, gender, education, etc. – from administrative records. As an illustrative reference, cf. Annex A for a survey-based snapshot of the characteristics of workers in China’s mining sector.<sup>4</sup> Second, it is necessary to assess possible redeployment opportunities in the same enterprise or sector and more general employment conditions and trends in the local, national and international labor markets. The third and final step is to identify alternative providers of auxiliary social services – i.e., whether there is a hospital in a nearby town – and to determine where gaps in service provision are likely to emerge.

Moreover, mass layoffs often face legal restrictions, such as those resulting from national legislation, sector-specific tripartite collective agreements, and enterprise-specific agreements. Different types of legal restrictions may need to be addressed either in parallel or sequentially. It is particularly important to identify key legal restrictions that serve as obstacles to the divestiture process, both in terms of the *de jure* environment and its *de facto* implementation (cf. Box 2 for a stylized legal checklist). There are examples of labor regulations which can be formidable

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<sup>4</sup> The task of collecting information about the general characteristics of the personnel that has to be laid off is particularly difficult for workers not directly employed by the coalmine that is to be closed down or downsized but instead is its value chain or in other indirectly affected firms. This personnel still needs to be a part of the calculation.

obstacles for labor divestiture. For example, a regulation in Morocco that no state employee could be dismissed hindered a rapid divestiture of the Jerada coal mine in the 1980s and the complicated priority order for dismissals in North Macedonia became an obstacle for implementing labor terminations in the 1990s. In some instances, if existing labor regulations hinder the divestiture process, it might be possible to explore options for changing them or for putting additional, more flexible regulations in place.

*Box 2 – Stylized legal checklist*

During pre-layoff planning, it is important to seek legal advice as to the various requirements placed on an employer by national legislation and industry-, sector- and enterprise-specific agreements. Some questions to consider:

- ✓ Is the sector covered by a collective agreement and, if so, what are the provisions with respect to collective dismissals?
- ✓ Is governmental permission required to implement collective dismissals?
- ✓ What are the requirements for consultation with trade unions or other employee representatives over collective dismissals?
- ✓ Is voluntary severance/early retirement a possible legal alternative?
- ✓ How are minimum severance payments to be calculated?
- ✓ How much notice must be given to each employee?
- ✓ What are the individual requirements that must be complied with in relation to each worker's dismissal?
- ✓ Is there specific legislation dealing with women or other protected groups, such as minorities?
- ✓ What legislation, if any, covers unemployment insurance, pension funds and other aspects of social protection?
- ✓ What rights do workers have in the event of transfers of employment to other employers and outsourcing companies?
- ✓ What procedures regulate dispute resolution, including arbitration (binding and non-binding), conciliation, and mediation?
- ✓ What laws are in place related to the rights of temporary, part-time, and self-employed workers?
- ✓ What is the legislation regarding public and private pension arrangements, and their portability between employers?
- ✓ Are there any rules that require preferential treatment for retrenched employees in respect to any future employment?

*Source: IFC (2005)*

Also during the pre-layoff planning phase, one needs to undertake an assessment of the relevant social protection system – encompassing social assistance programs such as cash transfers, school feeding and targeted food assistance; social insurance programs such as old-age and disability pensions, and unemployment insurance; and labor market programs, such as skills-building programs and job-search and matching programs (cf. World Bank 2012). The most successful transition support often takes place via existing social protection systems, by utilizing

widely applied and transparent outreach, targeting and delivery tools and topping up or extending coverage of existing programs. However, well-developed social protection systems do not exist in all countries. Even in cases where they do, they have not always been effectively deployed to mitigate the impacts of coal mine closures. A mapping of existing social protection programs will nevertheless guide the menu of options that can be offered at the pre- and post-layoff phase, as well as allow for estimates of the budget needs and institutional management demands for a successful social and labor response.

Several institutions need to be in place to plan and implement the divestiture process. First, it is important to identify the key stakeholders and engage them immediately. Solid stakeholder engagement can make the difference between an orderly and a failed coal mine closure. Stakeholders may include mine operators, mine workers, secondary industries that supply the mining industry, mining communities, women's groups, the institutions that will implement the social and labor support, and non-governmental organizations (NGOs) that may support mining communities. Second, the institution with the biggest stake in the success of the divestiture process should ideally be selected to lead the process. For example, if the coal mine closure goes hand in hand with privatization, then a privatization agency may be the best option whereas if closures and layoffs happen during a conflict or post-conflict situation, a reconstruction agency could be used. Third, it is important to obtain the necessary financing before the divestiture process is made public; running short of resources to finance committed services puts the entire process at risk. While mitigating social and labor impacts of the coal transition may be expensive in the short run, properly managed mitigation will lead to long-run cost savings (cf. Caldecott et al. 2017a).

It is also important to provide public information about (i) the intent to implement social and labor support alongside the mine closure; (ii) the stakeholder engagement strategy; and (iii) the general nature of the planned assistance for displaced workers. Such public information will serve to establish communication channels with the potentially displaced workers early in the divestiture process. The public information campaign should ideally be launched by the entities designing and implementing the social and labor support to ensure that everyone (including displaced workers) is provided with correct information, and that the information is not filtered

through third parties that may not fully understand the divesture process or may even have specific reasons for providing disinformation. Above all, care should be taken not to advertise services that cannot be delivered, as this will add to, and not reduce, social tensions.

### **3.2 Pre-layoff assistance**

As a first step in promoting smooth adjustment, the duration of pre-layoff notice – specifically in the case of large-scale layoffs – needs to be established. The duration of notice needs to be based on legal definitions and supporting regulations as well as practical realities. Longer periods of notice can be preferable to shorter periods. Notice periods that are too short (i.e., only two or three weeks) do not give workers enough time to start searching for work before losing their job, do not give the government time to provide workers with pre-layoff support services, and do not allow other stakeholders to mobilize support.<sup>5</sup>

It is critical that workers are clearly informed of the options and services they may be provided well before the actual layoff occurs. The period between the decision to divest and the time workers are actually displaced is one of the most difficult for those affected. In order to ease tensions and anxieties, early, honest and comprehensive information of affected workers as well as trade union representatives and other stakeholders is critical to minimize anxiety and resentment. OECD (2016, p. 251) emphasizes that “even if there is a high-level consensus among trade unions on sustainable development and climate protection, (...) those whose jobs are directly at stake sometimes oppose climate policies.” As in the pre-layoff planning phase, great care should again be taken not to advertise or promise services that cannot be delivered.

Certain services should begin before layoffs occur. Typical services implemented as part of pre-layoff assistance include: (i) establishing eligibility for and assessing interest in temporary income support and active labor market policies; (ii) worker profiling and skill audits to provide each worker with a clear understanding of their skills and assistance needs; and (iii) provision of initial in-plant jobs counseling and placement services. The process of providing such services

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<sup>5</sup> Internationally, precise legal mandates regarding advance notification for large-scale layoffs vary widely, but usually such layoffs trigger additional legal requirements. According to the OECD’s Indicators of Employment Protection, collective as opposed to individual dismissals result in longer notification periods in 28 out of 33 countries covered.

during the pre-layoff assistance phase, sometimes referred to as Industrial Adjustment Services (IAS) after a Canadian initiative (cf. Box 3), should collaboratively involve the Government, workers and the mine or other plant with the objective of starting services for workers before they even leave this plant. Rapid deployment is critical, as is leveraging the capacity of the local authorities and community (cf. Fretwell, 2017).

*Box 3 – Canada’s Industrial Adjustment Services*

Canada’s Industrial Adjustment Services (IAS) – originally founded in 1963 – and its successor organizations and initiatives consist of small units composed of specially trained staff who, on request, provide assistance to firms and communities facing large-scale job displacements. For instance, in the case of Canada’s province of New Brunswick, activities supported by its Department of Post-Secondary Education, Training and Labour have recently included the setting up of a temporary service offering employees facing job loss with early retirement option information, labor market information, employment program information and employment action planning. Also supported by New Brunswick’s Department of Post-Secondary Education, Training and Labour are human resource management services for companies or sectors facing change or expansion.

Evidence indicates that IAS support can be effective in terms of shortening periods of unemployment. Critical success factors include that the IAS need to focus limited resources on the most vulnerable workers to ensure that public funds are used in the most efficient way, and that all local stakeholders are involved and work together to solve practical labor problems. IAS also demonstrate to the worst-affected that both the community and the government care about the problems of adjustment.

*Source: Government of New Brunswick (2015) and Fretwell (2017)*

Any strategy involving active labor market policies to encourage re-employment will need to rely on suitable worker profiling. Not all workers will be able to invest in new skills, search for jobs in new sectors, or move to a new location – and not in all cases will such relatively costly interventions be necessary. At the same time, many workers will need direct assistance and will also be able to do at least one of these things. Therefore, a key determinant of success of active labor market policies both during the pre-layoff assistance and ensuing post-layoff assistance phase will be to accurately profile workers in terms of identifying what would help them find a new job – either through statistical profiling models, with the help of case workers or through a combination of these two approaches (cf. Loxha and Morgandi 2014). In fact, certain types of interventions are more effective, or necessarily differ, by worker profiles

### 3.3 Post-layoff assistance

Support to laid-off workers can be grouped into three categories: temporary income support, active labor market policies, and auxiliary support. Each serve a different need: temporary income support provides laid-off workers and their households with the means to survive the short-run income loss, active labor market policies facilitates their reintegration into the labor market in a different job, and auxiliary support provides services to and support to the individual, family, or community as they transition to their new source of livelihood.

#### *Temporary income support*

The main objective of temporary income support is to sustain the livelihoods of laid-off workers in a way that does not inhibit – and ideally promotes – labor market attachment. The precise design of income support instruments can have significant effects on the coverage and adequacy of financial support and on workers' incentive to actively look for jobs. The four main instruments for temporary income support are (i) severance or other forms of termination payments, (ii) unemployment insurance, (iii) social assistance payments, and (iv) early retirement incentives. Policy makers also need to consider the clearance of possible wage arrears as a first priority of funding and support.<sup>6</sup>

Termination payments can provide both quick-disbursing and longer-lasting income support for newly laid-off workers. There are two main forms of termination payments. First, termination payments can take the form of regular severance payments that firms fund and pay out upon separation, either through a voluntary benefit or as required by law. Second, in cases where large-scale layoffs occur, countries can set up special funds to dispense payments to laid-off workers in the affected industry or region. These special funds can be financed in various ways, although inevitably there will be considerable government contributions. Under both regular severance plans and special funds, benefits are usually disbursed either on a one-time basis or periodically through an annuity-type arrangement.<sup>7</sup> There are advantages and disadvantages

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<sup>6</sup> Strongman 2017 emphasizes that in the coal sector restructuring in Eastern Europe and Central Asia in the 1990s and 2000s wage arrears played a particularly prominent role

<sup>7</sup> Annuity payments that decline in value over a pre-defined payout period are a third option.



with each disbursement arrangement. On the one hand, annuity payments ensure that displaced workers will have continuous support while one-time payments create risks that workers will exhaust their severance pay before finding re-employment. On the other hand, receipt of the full payment at the beginning of the unemployment spell may allow more productive use, for instance by providing workers and their families with sufficient capital to start a small business or to migrate to a place with a more lucrative job market.<sup>8</sup>

If an unemployment insurance system exists, it provides a second line of support for laid-off workers. Unemployment insurance systems are generally designed to collect a stream of contributions over a long period of time and provide payouts to eligible beneficiaries (often those who have previously contributed to the system for a certain period of time) over a relatively short period. On their own, these systems are often not well-suited to provide income support in response to large-scale jobs losses that lead to longer-term unemployment spells typical of labor displacement in the coal sector since they are designed to support a small number of beneficiaries at any one time. Some countries top up the support that unemployment insurance can offer in such situations. For example, in the United States an extended benefits feature is triggered in times of high unemployment. Canada ties levels and durations of unemployment benefits to regional unemployment rates, so support is greater when and where joblessness is high. It should also be taken into account that while unemployment insurance systems can in principle offer extended income support to displaced workers, very long benefit periods can create job-search disincentives. In fact, there is evidence that extended unemployment benefit durations account for a substantial share of the increase in long-term unemployment in the United States during the Great Recession of 2007 to 2009 (cf. Faber and Valletta 2015). Starting an unemployment insurance system in the context of rapid transition is often not a viable option since the insurance fund usually needs to accumulate contributions before it can pay out

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<sup>8</sup> The generosity of termination payments varies considerably between countries. Holzmann and Vodopivec (2011) find that among upper-middle income countries, the mean benefit level for an employee with 20 years of tenure is 7.5 times monthly wages. Benefits provided by special funds are often considerably more generous than those provided through regular severance plans. While different countries calculate termination payment levels in various ways, for both regular severance plans and special funds, the level typically depends on years of service and salary prior to job loss. In some countries, the generosity of temporary income support in general and termination payments in particular may also differ between white and blue collar workers, permanent and fixed-term workers or those covered by collective agreements and those not covered.

benefits. Instead, the establishment of an unemployment insurance system needs to be the outcome of a separate long-term institutional development program.

Social assistance payments can act as a social safety net for those who do not qualify for, or have exhausted, regular unemployment benefits. In contrast to severance payments or unemployment insurance benefits, social assistance payments are usually not funded through contributions by employers or employees but paid out of general government revenue and available not to specific groups of (laid-off) workers but to the population at large, subject to specific eligibility requirements. Social assistance payments are also often means-tested (eligibility is based on a pre-established economic needs threshold), household-based, and of a lower value than unemployment benefits. Across the globe, most countries have designed, piloted and scaled-up social assistance programs. More recently, a growing number of countries have implemented “adaptive” social assistance programs specifically meant to be scaled up in response to economic or other shocks (cf. Box 4 for a prominent example).

*Box 4 – The Ethiopia Productive Safety Net Program*

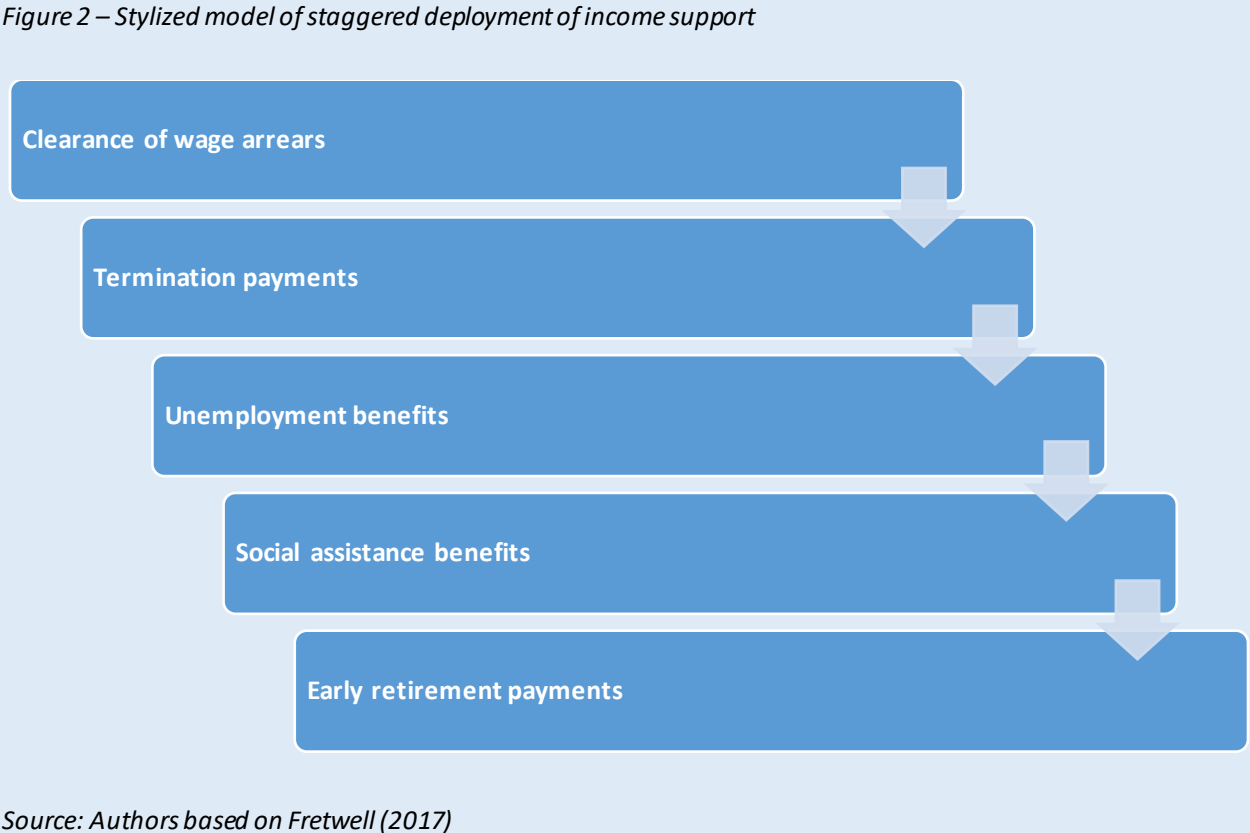
The Government of Ethiopia’s response to the 2015/2016 El Niño drought was its largest-ever, providing 18.2 million people – or 20 percent of the country’s total population of 91 million – with food or the cash to buy it with. On the frontline of this effort was the Productive Safety Net Program, one of the world’s largest social assistance programs. Run by the Government of Ethiopia, it pools money from the government and various donors, including the World Bank’s International Development Association (IDA). The Productive Safety Net Program provides regular cash or food transfers to eight million people, four million of them in drought-affected areas. Its food-for-work component supports public works programs, chosen by members of the communities affected and usually related to landscape restoration, irrigation, and agro-forestry. During droughts, the program has a contingency fund that allows it to scale up to include new beneficiaries, as well as to increase the length of time they will receive benefits from five to seven months. Using an “adaptive” social protection approach, the World Bank support also allows the government to develop clearer early warning triggers and to integrate social protection and disaster risk management systems. The Productive Safety Net Program is more than a decade old and, in this time, integrated delivery systems encompassing the national, district and village levels have been set up. Over the years, the government has also been able to improve the targeting of beneficiaries through the establishment of community-based targeting supplemented by a proxy-means test based poverty index.

*Source: World Bank (2014)*

Early retirement programs are frequently used to incentivize older laid-off workers to exit the labor force. These programs have political value: they help limit labor disputes and reduce damage to morale. They are also a pragmatic solution for some older laid-off workers who likely

have little chance to find re-employment. At the same time, they put a high fiscal burden on the pension system and, if not well targeted, may deprive the economy of productive human capital (which is particularly problematic in the case of aging societies). For instance, Campa (1997) documents that when a large number of Spain's state-owned enterprises were privatized or closed in the 1980s, four employment promotion funds were established that paid older laid-off workers 80 percent of their previous salary. These relatively generous early retirement incentives likely contributed to the fact that a large share of laid-off workers did not find new jobs but instead exited the labor force. Given the potentially high costs of early retirement programs, it may be preferable to offer social assistance payments to laid-off workers until they reach the regular retirement age, augmented by bonus payments for those who delay retirement.

Figure 2 – Stylized model of staggered deployment of income support



Source: Authors based on Fretwell (2017)

In many countries, termination payments, unemployment insurance benefits, social assistance payments, and (sometimes) early retirement incentives are coordinated. In general,

countries need to consider how different forms of income support can be implemented in a sequential fashion (cf. Figure 2 for a stylized model) and how possible interactions between severance payments, unemployment insurance benefits, social assistance payments, and early retirement incentives can be productively employed in practice. For example, in countries with a strong unemployment insurance system, social assistance benefits can typically only be accessed once unemployment insurance benefits have been depleted. Similarly, it might be sensible to stipulate that a worker may be eligible to receive termination payments upon exhaustion of unemployment insurance benefits, or *vice versa*. Alternatively, the level of one benefit may be adjusted downward to compensate for the existence of another.

#### *Active labor market policies*

Active labor market policies offer services, programs, and incentives that encourage and enable the re-employment of laid-off workers. Active labor market policies usually include one or a combination of the following three types: (i) employment services such as labor exchanges, vocational counseling and mobility assistance; (ii) education and training through institutional training or on-the-job training; and (iii) small business support services (e.g., micro credits and grants, technical assistance for startups, and support for business incubators) and subsidized employment in either the private or the public sector. As summarized in Figure 3, the three different types of active labor market policies can be most effectively deployed to address frictional unemployment (when displaced workers need assistance to access existing demand), structural unemployment (when displaced workers lack relevant skills and need retraining to succeed), and a lack of labor demand (when there are no jobs regardless of the skills the displaced workers have or may acquire), respectively. There are also certain trade-offs with regard to their typical costs per beneficiary and expected impacts. As with temporary income support, not all settings will have the capacity or financing to implement all types of active labor market policies.

Employment services most effectively address frictional unemployment, i.e., situations when displaced workers have skills for which there is labor demand, but assistance is needed to access this demand. Public employment agencies, NGOs, and/or private firms can provide employment services, which may generally be of three categories. First, labor exchange services

to support job search provide, at their core, lists with job openings or employer contact information. Job seekers either follow up independently on a job posting or labor intermediation officers broker connections between employers and job seekers. In the case of coal mine closure, employment services might for instance involve the referral of electricians employed by the coal mine to employers outside of the coal sector looking to hire electricians.

Figure 3 – Stylized labor market challenges and applicable active labor market policies

Labor market challenge	Applicable active labor market policy	Illustrative costs per beneficiary in middle-income countries	Average impact on probability of employment		
			Short term	Medium term	Longer term
<b>Frictional unemployment</b> <i>displaced workers need assistance to access existing demand</i>	<ul style="list-style-type: none"> <li>• <b>Employment services</b></li> <li>• Labor exchanges</li> <li>• Vocational counseling</li> <li>• Mobility assistance</li> </ul>	\$15–\$30 (for labor exchanges)	☑	☑	☒
<b>Structural unemployment</b> <i>displaced workers lack relevant skills and need retraining to succeed</i>	<ul style="list-style-type: none"> <li>• <b>Education and training</b></li> <li>• Institutional training</li> <li>• On-the-job training</li> <li>• Comprehensive programs with both institutional and on-the-job training</li> </ul>	\$250–\$1,000 (for institutional training) \$700–\$2,000 (for comprehensive programs)	☑	☑☑☑	☑☑☑
<b>Lack of labor demand</b> <i>there are no jobs regardless of the skills the displaced workers have or may acquire</i>	<ul style="list-style-type: none"> <li>• <b>Small business support and subsidized employment</b></li> <li>• Small business support</li> <li>• Wage subsidies</li> <li>• Public works programs</li> </ul>	\$500–\$3,000 (for business support) \$300–2,400 (for subsidized employment)	☒	☒	☑

Source: Authors based on Betcherman et al. (2007) Card, Kluge and Weber (2017) and Fretwell (2017)

Notes: ☒ denotes an impact on a program beneficiary’s probability of employment of less than 0.05 standard deviations, ☑ an impact of 0.05 to 0.1 standard deviations and ☑☑☑ an impact of at least 0.1 standard deviations, all according to the meta-analysis by Card, Kluge and Weber (2017).

A second category of employment services is vocational counselling (i.e. aptitude and interest assessment, provision of information on labor demand and wages, and guidance on education and training programs to build skills in occupations for which there is a demand). Vocational counseling can be effective as a self-standing service – e.g. assessing whether coal miners have aptitude and interest in specific occupations in other sectors – or as a screening device to control access to education and training programs. A third category of employment services is mobility assistance. Mobility assistance can be useful when local labor markets are stagnant or dominated by a coal mine or other plant in the process of being shut down but when opportunities exist elsewhere in the country. Take-up for this category of employment services can be limited because of cultural or other barriers to labor mobility; it is generally worth targeting it to specific groups, for instance younger coal miners. Employment services' cost per beneficiary tend to be low as compared to other active labor policies (cf. Box 5 for the description of a project implementing a suite of employment services targeted at both workers and employers).

*Box 5 – The Bosnia and Herzegovina Employment Support Project*

One of the main subcomponents of the Bosnia and Herzegovina Employment Support Project (a World-Bank-supported project) intends to increase private sector job placements by providing improved employment services for job seekers and employers. Services for job seekers consist of activities such as use of improved methodologies for the intake/registration of newly unemployed job seekers, profiling of job seekers by risk of falling into long-term unemployment, and tailored counseling to clearly identify and focus resources on the job seekers in need of support. Improved processes within employment services are expected to increase face time with job seekers, shorten waiting time between first registration and development of an individual action plan, and increase monitoring of progress and needs of the job seeker. Services for employers include the development of new employer outreach methodologies, local skills needs assessments with employers, the promotion of online services to increase the number of vacancies registered with the employment services, and the provision of tailored human resource services. The project also contributes to automating certain processes and using online services and electronic media to the extent possible, as well as establishing a division of functions for staff in employment offices. It will also result in a physical reorganization of employment offices to separate business processes such as administration and vocational counseling. In addition, the project emphasizes better communication with clients through better information dissemination and intensified outreach. The Bosnia and Herzegovina Employment Support Project uses results-based features in its employment services subcomponent. Disbursement-linked indicators include (i) increases in the number of job seekers that have an individual action plan, (ii) the number of job vacancies collected and (iii) the number of successful job matches.

*Source: World Bank (2016)*

Education and training programs can address structural unemployment that occurs when displaced workers lack relevant skills and therefore need reskilling or retraining to succeed in the labor market. In the case of coal mine closure, education and training programs might for instance involve the retraining of operating engineers employed by the coal mine to operate and repair different but related types of equipment used outside of the coal sector.<sup>9</sup> Three general categories of education and training programs can be distinguished. First, institutional training by private and/or public agencies. Second, on-the-job training by the private sector, possibly supported through wage subsidies. Third, comprehensive training programs that combine institutional training and on-the-job training.

Education and training programs can assist labor redeployment at moderate costs per beneficiary. Their design should be driven by demand (firms) rather than supply (education and training providers), and foster competition and efficiency in program delivery (for instance through the use of performance-based contracts with service providers). Providing vouchers that can be redeemed at different training providers is one way to make training market-oriented. For instance, the United States has introduced a number of voucher-based schemes that place a strong emphasis on market forces by offering beneficiaries a choice of training providers and programs. A prominent example is the training provided through the Workforce Innovation and Opportunity Act. Title I of the Act implements training services through vouchers that allow beneficiaries to select their preferred training provider from a list of certified providers. Beneficiaries are also given a “report card” with information on the past performance of different providers (cf. Congressional Research Service, 2015).

Small business support services can be offered to address a general lack of demand for labor, which can be a particularly acute problem in mono-industry communities. There are three common small business support services. First, technical assistance for startups is an intervention

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<sup>9</sup> Even across the coal mining industry, coal miners are not necessarily perfectly fungible and might need education and training to access different jobs. For example, mine closures in the Appalachian region between 1990 and 2008 resulted in a 40 percent decline in US coal production while 71 percent of US coal jobs were lost between 1980 and 2015. At the same time, coal production in Wyoming and other parts of the Western United States increased by 20 percent between 1990 and 2008. West Virginia’s miners could not simply move west to take up work, though, since open pit coal mining found there is technology intensive and requires advanced computer skills while Appalachia’s declining underground mining industry relies more on workers with manual skills (cf. Kok 2017).

that is relatively low cost and low risk. If laid-off workers have received severance payment, appropriate technical assistance might jump-start the creation of new businesses. Second, micro credits and grants perform best if combined with targeted technical assistance. Third, small business incubators provide small firms with an entrepreneurial environment, professional networking and mentorship opportunities, and financial and other resources all in one place. At least in the short term, they are often effective in job creation and also send a strong signal to local communities that support is available (cf. Pompa 2013). In a favorable context, they can become self-sustaining after a few years. While small business support services can be effective, they can also be relatively more expensive than other active labor market policies. In addition, they might attract or be suitable for a relatively limited share of displaced workers.

Employment may also be directly subsidized, either through wage subsidies in the private sector or through public works programs. Wage subsidies for private sector employers come in numerous forms and can be provided through various mechanisms, ranging from direct transfers (vouchers) to reductions in social security contributions and tax credits, in exchange for hiring more workers than they normally need. They tend to be more appropriate to mitigate a temporary lack of labor demand (for instance during a recession) than secular trends such as the coal transition. Public works programs do not work through employers, instead creating temporary work that is conceptualized, implemented, and financed by the public sector. As outlined in World Bank (2013), the implementation of public works programs can sometimes be very successfully driven by the community, i.e., the community selects the project and provides the labor while the government provides financing and oversight. As the same time, World Bank (2013) also explains that community participation has not always been positive as it can lead to corruption and to program capture by local elites. Similar to education and training programs, project management and technical expertise is oftentimes best provided by private agencies using performance-based contracts (i.e., with payments based on agreed targets of post-program employment and unit costs).

While public works programs often have comparatively high unit costs and little or no long-term positive employment impact, they can be effective in mending the social fabric in difficult settings (cf. Fretwell, 2017). Moreover, such programs can be implemented with the dual



objectives of addressing a lack of labor demand and providing income support. For instance, to mitigate the impact of the global financial crisis, Latvia, with support from a World Bank development policy loan implemented an emergency public works program that increased participating households' incomes by 37 percent relative to similar households not benefiting from the program (cf. Box 6).

*Box 6 – Latvia's Workplaces with Stipend Emergency Public Works Program*

During the global financial crisis from 2008 to 2010, individuals in Latvia who had lost their job but were not covered by unemployment insurance were eligible to apply for participation in the Workplaces with Stipend Program. Each of Latvia's regions was assigned a specific number of program places according to the number of likely unemployed not covered by unemployment insurance in that region. Participants had to work full time, were employed in labor-intensive tasks (80 percent of the program budget had to be dedicated to labor costs), and received a monthly stipend of 55 percent of the legal minimum wage. A low benefit rate was intentionally chosen to achieve the goal of "self-targeting", i.e., of attracting those in need of support and able to work. Further, by requiring daily, full-time commitment to work, the program kept participants active without impinging on their incentives to continue looking for employment. An impact evaluation using a quasi-experimental estimation strategy found that the program had been successfully targeted at poor people, and that leakage of benefits to non-poor households had been small. The impact evaluation also found that the program's stipends had mitigated the impact of job losses and raised participating households' incomes by 37 percent relative to similar households not benefiting from the program.

*Sources: World Bank (2010) and Azam, Ferré and Ajwad (2013)*

Similar to temporary income support program, appropriate sequencing of active labor market policies is important. For instance, Germany and some other OECD countries make services with relatively low unit costs like employment services available to a broad range of beneficiaries while services with higher unit costs such as certain forms of education and training support are sometimes only available for those who have been unable to find employment with the help of this initial set of services, or face significant other hurdles to re-employment (e.g., due to their health status). Moreover, the sequencing of active labor market policies should fit the sequencing of temporary income support to avoid duplication and leverage synergies, e.g. between small business support services and unemployment or termination payments.

### *Auxiliary services*

Auxiliary post-layoff assistance services can include social programs that help ensure that displaced workers and their families have adequate access to the health, education and similar services to which they are entitled. Laid-off workers should also receive all pension benefits to which they are entitled. One early example of the provision of a fairly comprehensive suite of auxiliary post-layoff assistance services is the Employment Fund created by North Macedonia in the mid-1990s. As described in Fretwell (2017), the Employment Fund financed health insurance and retirement benefits for laid-off workers, in addition to providing them with temporary income support for 30 months and reimbursing training expenses.

### **3.4 Complementary initiatives**

It is worth repeating that post-layoff assistance programs, in and of themselves, do not create jobs. Active labor market policies coupled with income support and auxiliary services can address frictional unemployment, build human capital, and be helpful in a myriad of other ways. However, private sector investment and economic development are needed to create employment. Therefore, on the policy level, instruments to help mitigate the consequences of job displacements should go hand in hand with reforms to promote private sector development, remove obstacles to job creation and modernize labor market policies. For instance, in Argentina and Chile privatization schemes involving large-scale layoffs succeeded in part because job displacements coincided with labor market and macroeconomic reforms that generated economic growth and expanded private-sector job opportunities (cf. Fretwell 2017).

In the case of geographically concentrated job displacements, local economic development grants to lagging regions and other instruments that promote local economic development can sometimes be important. The most prominent of such instrument are grants provided by the European Union to disadvantaged regions of member states. Grants usually come from two pools, the Structural Funds (made up of the European Regional Development Fund and the European Social Fund) and the Cohesion Fund. Evaluations of the European Union's regional policy – like those by Becker, Egger and von Ehrlich (2010, 2012) – show that local economic development grants can have a long-term positive impact on economic growth, though their

effects on employment growth tend to be more controversial. It is also worth noting that the effectiveness of instruments to promote local economic development will likely depend on the specific local circumstances. They hold most promise under circumstances where the local context provides a solid foundation for an economic rebound e.g. due to a strong human capital base and easy access to markets. Conversely, if such circumstances are not present, the most promising economic developing strategy might not be to support local economic development but rather the relocation of laid-off coal sector workers, that is, to bring workers to jobs instead of jobs to workers.<sup>10</sup>

## **4 Implementation considerations**

### **4.1 Institutional context**

The design of the social and labor response to the coal transition, while based on some general principles, must be country- and sector-specific and rely on political commitment. If there is no political commitment to using resources to mitigate the social and labor impacts of coal mine closure, coal mines might stay open, the transition from coal might stall, and greenhouse gas emissions might continue unabated. In the coal sector and beyond, there are many examples of planned industrial restructuring that was not realized due to concerns about the social and labor effects. Fretwell (2017) describes an example in Karachi, Pakistan, where it was planned to lay off surplus dock workers who contributed to high port costs. However, while this initiative was planned from a technical perspective it was ultimately never implemented due to a lack of political commitment in the face of pending elections.

It is easier to undertake divestiture when the economy is improving, investment is increasing, and unemployment is declining. The broad state of the economy will also determine if sufficient financing for the implementation of ambitious income support programs and active labor market policies is available. The worse the economic situation, the more limited the funds for implementing a social and labor response can be and the more political commitment is needed. Adding job losses from mine closures to an already stagnant economy may trigger social unrest.

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<sup>10</sup> According to IFC (2005), it is also good practice to invest in environmental rehabilitation and convert abandoned mining sites, buildings, infrastructure and land to productive economic and social use for the community.

In addition, some interventions, such as employment services, can be ineffective in an adverse economic environment since they rely on healthy labor demand.

Irrespective of the general economic climate, the availability of and potential interactions with existing social protection and labor programs – including unemployment insurance, social assistance, disability benefits, and pensions – have to be carefully considered. For instance, the design of regular social assistance or unemployment benefit systems should directly influence the features and generosity of temporary income support and active labor policies offered to laid-off coal workers.

With regard to active labor market policies, if there is no existing framework to provide an array of services to address frictional and structural unemployment as well as lack of demand for labor, or if the programs that exist are underfinanced, narrow in scope, or if there are limited service providers, it will be challenging to effectively serve a large numbers of laid-off workers. As emphasized in Box 7, the examples of the restructuring of the coal sector in Russia and Poland in the late 1990s and of broader sectoral readjustments and privatizations in China during the same time period can provide illustrative examples of the importance of a having social protection and labor systems available at the outset of economic change. At the same time, the examples also show how given sufficient political commitment, economic change itself – at least if it comes about not too suddenly – can contribute to the development of more mature social protection and labor systems.

*Box 7 – Mitigating the Social Impact of Economic Change in Russia, Poland and China*

*De facto*, the mass-scale restructuring of Russia’s coal industry began in 1993, when the price of coal was liberalized. The coal industry’s overall workforce (including workers involved in extraction, on the surface, in administration and social assets, etc.) declined from about 900,000 in 1992 to 328,000 by the end of 2001. Since 1996, the government financed Local Development Programs (LDP) in coal municipalities impacted by mine closure. LDP funds were meant to be used for six types of activities, namely pre-redundancy consultations, professional retraining, temporary public works programs, small business support, job-creation programs and relocation assistance.

The first two years of the implementation of LDPs through regional governments were characterized by poor administration, a lack of accountability for subsidies received and disbursed, and a tendency by regional governments to absorb the targeted LDP funds into the general regional budget. In other words, the LDPs had a steep “learning curve”, as local governments and other engaged local bodies grappled for the first time with such complex tasks as optimizing the use of financing, carrying out project evaluation, and organizing competitive tendering. While organizing training seminars and conferences for sharing experiences were effective tools for capacity building, the main lesson learned was that, ideally, the institutional and regulatory framework for such

complex programs should be in place before large-scale layoffs take place. Instead, in Russia precious years were lost between the beginning of the mass program of mine closure in the mid-1990s, the establishment of the LDP in 1996, and the revised form in 1998. Partly as a result, the number of former coal workers who found jobs or self-employment through LDPs was small compared to the number of jobs lost through mine closure.

In Poland, employment in the coal sector also declined rapidly in the 1990s. The number of miners fell from 388,000 in 1990 to 98,000 in 2015; 85 percent of this employment reduction was completed by 2002. Between 1990 and 1995, employment was reduced almost entirely through natural fluctuation, i.e., through a hiring freeze coupled with the gradual departure or retirement of some miners. Starting in the mid-1990s, the restructuring process was increasingly supported by additional incentives. The restructuring program adopted by the Government of Poland in 1998 was the broadest and most ambitious of a series of programs implemented after 1989. In the area of social protection and labor its most important aspect was the Mining Social Package which consisted of relatively generous income support measures as well as education and training programs. At this point in time, Poland generally had already put relevant institutional arrangements in place. Partly as a result, the Mining Social Package is oftentimes recognized as a comparatively successful program that achieved most of its main objectives. In particular, it was implemented without significant social turmoil and the number of miners who voluntarily decided to accept the package and quit their jobs exceeded the government's initial expectations. At the same time, the Mining Social Package emphasized income support as compared to active labor market policies. Due to this and other reasons – including miners' strong identification with their sector and resulting high reservation wages for work in other industries – a relatively large number of former coal workers failed to find productive employment outside of their original line of work.

In parallel to the downsizing of the coal sector in Russia and Poland, a large number of Chinese workers lost their jobs as employment guarantees for staff of state-owned enterprises were removed and the enterprises laid off tens of millions of workers. According to official figures, about 28.2 million workers or more than 15 percent of the urban labor force were laid off between 1998 and 2003. The sheer number of layoffs posed tremendous economic and social challenges. Empirical analyses of China's mass labor layoffs in the late 1990s (like Appleton et al. 2002, Giles, Park and Cai 2006, Betcherman and Blunch 2008, and Dong and Xu 2008) document that for laid-off workers, rates of labor force withdrawal were high, formal sector re-employment rates low and earnings losses substantial. Research also shows that a large number of workers found work in the informal sector, which cushioned the effects of the layoffs. In an attempt to mitigate the effects of job displacements affecting tens of millions of workers, the Government of China introduced an early retirement program for workers within five years of the retirement age and first piloted and then scaled up the *xiagang* re-employment program. The *xiagang* program involved significant provisioning of public funds and required state-owned enterprises to provide temporary income support and re-employment services for up to three years to workers who had been laid off. *Xiagang* workers were also promised other benefits, including health insurance and pension contributions.

Research finds that the *xiagang* program achieved somewhat mixed success in terms of coverage, adequacy and leakage of temporary income support and labor market impacts of active labor market policies. Notwithstanding these challenges, the program served as an important catalyst for the creation of a modern social protection system in China. In addition to the *xiagang* program, the country introduced an unemployment insurance program and the urban *dibao* social assistance program. Together, the programs were called the "three guarantee lines" to provide basic income support for unemployed workers and their families: Laid-off workers could receive temporary income support for up to three years through the *xiagang* program. Those who still lacked a job after three years could claim unemployment insurance benefits for a maximum of two years. In addition, families with laid-off workers could apply for income support from the urban *dibao* program if they met the applicable eligibility criteria. In parallel, reforms of pension and health insurance programs were also introduced.

Sources: Haney and Shkaratan (2003), Schmillen (2020) and Szpor and Świącicka (n.d.)

## 4.2 Local context and dynamics of change

The precise design of a support package for mitigating social and labor impacts of the coal transition will depend on the local context, including factors such as the health of the economy and availability of fiscal resources, the state of the social protection system, and the dynamics of the coal transition. For illustrative purposes, the dynamics of the transition can be categorized according to the nature of the coal mine closure: either a sudden shock (defined as a rapid disruption to the coal production industry, within the span of a few years) or a managed descent (a planned and controlled coal transition, which takes place over a period of several years or decades). For instance, the coal sector in the former Soviet Union declined rapidly in the 1990s while the sector's decline in Germany and the Netherlands was managed over several decades. Of course, mixed dynamics occur as well: As detailed in World Bank (2018), coal sector employment in the Appalachian region of the United States has been declining for decades and the region has seen both periods of relatively slow and steady decline and sudden collapse.

Depending on the local contexts and dynamics of change it will be necessary to select or emphasize certain instruments to be included in the support package during pre-layoff planning, pre-layoff assistance, and post-layoff assistance. In addition, even the relative emphasis on these three phases may need to be adjusted. For instance, as mentioned above, the first two phases may not be addressed in-depth if layoffs begin quickly with little advance planning (cf. Table 1 for a stylized decision matrix according to the dynamics of change, the economic environment and availability of fiscal resources, and the state of the social protection system as important but not necessarily exhaustive factors determining the appropriate response).

*Table 1 – Stylized Decision Matrix according to the Dynamics of Change and Institutional Context*

Dynamics of change	Economic environment and availability of fiscal resources	State of social protection system	
		Robust, good-capacity social protection system	Limited social protection system
<b>Sudden Shock</b>	<b>Healthy and diverse local economy with sufficient fiscal resources</b>	Utilize the full menu of options, with an emphasis on mixing termination payments, unemployment benefits and social	Focus on existing, basic income support and active labor market policies, consider additional budgetary requirements due

		assistance and providing employment services and comprehensive education and training programs.	to leakage (because of an absence of targeting systems or limited capacity).
	<b>Stagnant or non-diversified local economy with limited fiscal resources</b>	Emphasize long-term income support (including potentially early retirement options) and provide mobility assistance and support for small businesses.	Emphasize income support based on existing, basic institutions (e.g. through severance pay), public works programs, mobility assistance.
<b>Managed descent</b>	<b>Healthy and diverse local economy with sufficient fiscal resources</b>	Utilize the full menu of options, adapted to the specific needs of affected workers.	Utilize the full menu of options and focus on filling gaps and strengthening capacity and creating missing institutions (e.g., unemployment insurance, social assistance and full-range employment services).
	<b>Stagnant or non-diversified local economy with limited fiscal resources</b>	Offer customized income support including through early retirement incentives, full-service mobility support.	Emphasize income support and active labor market policies based on existing, basic institutions (e.g. through severance pay or labor exchanges) and in parallel strengthen capacity and develop missing institutions – such as social assistance programs and vocational counseling. Consider small business support, subsidized employment and mobility assistance.

Source: Authors

Even in the case of a sudden shock, if the economy as a whole is creating jobs and has sufficient fiscal resources and a well-developed social protection system, the full menu of interventions to support workers can be feasibly implemented. While in this case the pre-layoff process may be severely truncated, existing institutions (i.e., temporary income support programs and active labor market policies) can be mobilized to quickly lay the groundwork for the deployment of post-layoff assistance. For example, as discussed in Box 7 in the mid-1990s Poland had at least some fundamental elements of a social protection system in place to manage

the relatively sudden closure of many large coal mines (cf. Szpor and Świącicka n.d.). However, if social and labor systems are not initially in place, it is not feasible to create them during the shock. In several instances – for example in China with its large-scale restructuring of state-owned enterprises in the late 1990s also discussed in Box 6 – the institutions created in response to the shock were not up and running until *after* the shock had subsided. While this proved helpful in the long run, during a sudden shock itself, it is best to build on programs that exist – such as a simple pension system or rudimentary labor exchanges – and only to add services and programs that can be mobilized quickly, such as one-time severance payments and temporary public works programs.

A sudden shock is particularly difficult to manage if the economy is weak and fiscal resources are limited. Labor absorption takes time even under the best of circumstances. In the context of a weak economy, the sudden occurrence of a large number of similarly skilled and geographically concentrated workers seeking work will limit the effectiveness of re-employment programs; Schmieder et al. (2019) document that the impacts of job displacement on affected workers' earnings nearly doubles in size during economic downturns. This situation is exacerbated in the presence of larger numbers of displaced workers, less diversified local markets, and lower-capacity social protection and labor systems. In such instances, employment services and education and training programs are likely to have comparatively little impact. Instead, limited fiscal resources need to be prioritized on managing long transition periods (to allow for a slow labor market absorption), incentivizing workers to exit the labor market (via early retirement programs), or facilitating their transition into other labor markets (through mobility support or subsidized employment). Under circumstances where the local context holds promise for an economic rebound e.g. due to a strong human capital base and easy access to markets, these interventions may buy time for strengthening local capacity as well as for local development plans to take hold and create a market for new small businesses and start-ups. Conversely, if these circumstances are not present, the most promising economic developing strategy might not be to support local economic development but rather the relocation of laid-off coal sector workers.



A managed descent provides more time for capacity building and the development of more complex income support measures and active labor market policies. If a robust social protection system exists, the longer time span of the layoff process permits time for adjusting services to respond to the specific needs of coal workers and workers indirectly affected by coal mine closure. In addition, a gradually unfolding managed descent can provide time to develop new income support instruments or advanced active labor market policies.

### **4.3 Other implementation considerations**

The mitigation of social and labor impacts of the coal transition will incur both short-term and long-term costs that need to be budgeted up front. The short-term costs include covering wage arrears and severance payments (if the coal company does not have the resources to do so) and financing the expansion of temporary income support and active labor market policies. Longer term costs include pension payments, local redevelopment funds, and financing of any social services that had been funded by the coal companies. Funding may come from the local, regional or national budget and either from general revenues or earmarked funding sources. For instance, the Netherlands financed part of the costs of mitigating the transition from coal to gas as its primary source of electricity through a royalty on gas sales (cf. Caldecott et al. 2017). Funding can even be organized on the supra-national level. This is for instance the case with the European Union's Globalization Adjustment Fund (cf. Box 8). This Fund also offers an interesting funding model for large, decentralized countries with a geographically dispersed coal sector. In such circumstances, the central government could set up a coal sector adjustment fund which regional or local governments could then tap into.

#### *Box 8 – The EU's European Globalization Adjustment Fund*

The European Globalization Adjustment Fund (EGF) was established in December 2006. It is funded by the European Union while the responsibility for applying and implementing EGF funding lies with the relevant authorities of the concerned Member States, which also have to provide 50 percent co-financing. The EGF funds activities in the areas of information, advice, and guidance through individual case management; specific training measures; employment and recruitment incentives; support to self-employment; and a range of other financial allowances to support job search, mobility, and subsistence allowances in instances where a link between job losses and significant structural changes in world trade patterns can be clearly demonstrated.

An evaluation of the EGF documented 73 cases of EGF support which had reached 55,302 laid-off workers. Seventy-nine percent of beneficiaries were of age 25 to 54. Beneficiaries had a lower than average educational attainment. The average share of female beneficiaries was 33 percent. The average re-employment rate was 49 percent which was seen as a relatively positive outcome considering generally unfavorable economic conditions and worker characteristics. Key good practices identified by the evaluation included the nurturing of strong delivery partnerships and collaboration with public employment services and with industry; the establishment of strong lines of communication with workers in order to determine their priorities and expectations; and the development of specific implementation plans early in the divestment process.

*Source: Weber et al. (2015)*

The costs of proactively managing the coal transition should not be underestimated. However, it is helpful to keep in mind that a reactive approach to the transition will not only have environmental and social costs but that delaying the inevitable by subsidizing obsolete jobs in the coal sector will also imply significant costs. For instance, Caldecott et al. (2017) contrast the case of the coal transitions in the Netherlands and Spain. In the Netherlands, the transition was proactively managed and resulted in little net loss of employment – but investment in new economic activities cost between €300,000 and €400,000 per new long-term job created. Spain followed a very different approach and subsidized unprofitable coal mines for decades – at a cumulative cost of about €250,000 per job temporarily saved. Caldecott et al. (2017, p. 11) argue that subsidizing unprofitable coal mines usually not only involves such direct transfers to coal workers but also indirect costs – for instance in the form of higher pensions to former coal miners and support to workers indirectly dependent on the mines – and that therefore “the aggregate social costs to the state of a failure to invest in the transition of workers and regions are often much higher than the costs of not investing.”

Efficient administration of income support programs and active labor market policies is critical. Ideally, the same amount and type of income support would be offered to laid-off coal workers and displaced workers in other sectors. However, in many cases implementing agencies might be different and different programs may run in parallel, potentially with different criteria due to the clientele (i.e., the average training duration for coal workers may be longer if they need major reskilling). Further complications may arise if existing public employment services administer labor redeployment programs for displaced coal workers in parallel with other programs for the unemployed. In this case, staff may misinterpret eligibility criteria for the new

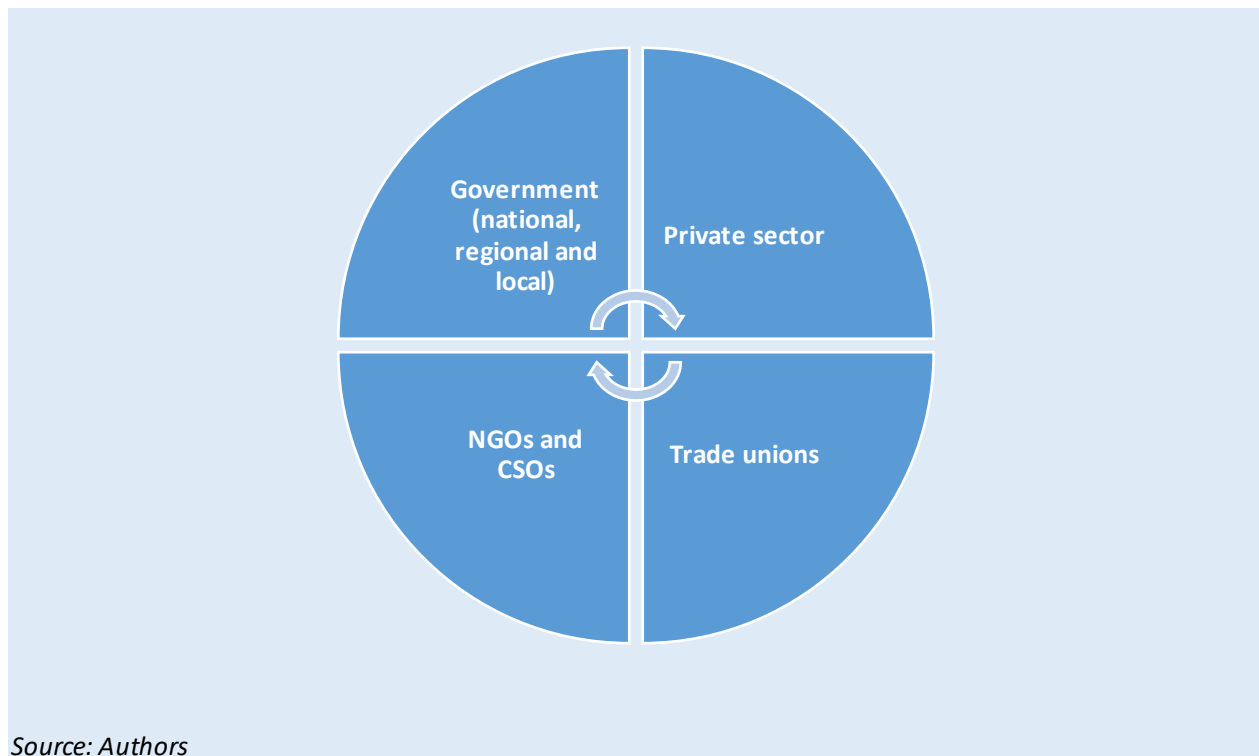
program and force beneficiaries into an inappropriate mold based on criteria in existing programs. However, there may also be good reasons to provide differentiated services to former coal workers. First, regular programs may not be as responsive to serve the needs of displaced workers. Second, the government may want to differentiate the sector-specific programs from regular programs for political, social, or financial reasons.

The most successful efforts to mitigate the social labor impacts of the coal transition have included direct dialogue between key stakeholders. Sheldon et al. (2018) see the collaborative approach of federal and state governments in Germany's Ruhr region as one of the key factors underlying the region's (comparatively) successful transition from coal and contrast this approach with the more top-down management of the coal sector transition in Southern Wales. Key stakeholders to include in the dialogue are different levels of government, the private sector, trade unions, and NGOs (including those concerned about worker welfare and the environmental impacts of coal) and community service organizations (CSOs). The design, implementation, and evaluation of social and labor mitigation measures require the involvement of these stakeholders before, during, and after the closure of coal mines.

As visualized in Figure 4, national governments can work jointly with regional and local governments to assist communities affected by job displacements, and NGOs and CSOs can be valuable partners as well. Strong trade unions can be an ally or adversary, depending on their view of the legitimacy of the process and the design of the mitigation efforts. Trade unions may sometimes also be linked with the political opposition and therefore affect the political commitment of the government. The best approach is regular and upfront communication and involvement of different stakeholders in general and labor representatives in particular in the design of the response. For instance, OECD (2016) describes how the operator of the Diablo Canyon nuclear power plant in California informed the relevant trade union eight years before the proposed shut-down of the plant (planned for 2024), which allowed ample time for the negotiation of a package including severance and other payments as well retraining. The operator also negotiated with the local government and agreed to compensate it for its loss of property tax revenue. As documented by Suwala (2010), in the case of structural change in Poland's coal-mining industry, local governments were heavily involved in managing layoffs and were expected

to play a key role in facilitating new employment opportunities for former miners. It should be noted that due to limited local government capacity the success of this initiative on the ground was somewhat mixed.

*Figure 4 – Stylized Stakeholders for mitigating the social and labor impacts of the coal transition*



*Source: Authors*

It is also important to include appropriate appeal and grievance redress procedures to ensure a sense of fairness and that consultation reaches down to the individual level. Key elements of an effective appeal or grievance redress procedure include a fair and transparent process, the right for all laid-off workers to initiate appeal and grievance redress procedures, and the timely completion of the process (cf. IFC 2005). It is also important that the way in which the amount and terms of income support are calculated and active labor market policies made available are fully transparent to each affected worker. Full and frank disclosure of information helps to avoid rumors and misinformation, which again can fuel low morale and low productivity in the workplace. A transparent process that engages key stakeholders early on also decreases the likelihood of resistance to changes in the longer run.

Special attention should be given to rigorous monitoring and evaluation. Monitoring and evaluation of all activities need to be built in as an integral part of any social and labor mitigation response to the coal transition. Normal fiscal and administrative audits need to be completed for all programs to ensure payments are going to eligible persons. Audits should include matching of individual worker records between programs, and if possible, to identify individuals who may be receiving illegal duplicate payments (e.g., they receive both unemployment benefits and stipends from a public works program). Rigorous monitoring and evaluation will also include regular tracer studies of displaced workers and sporadic process and impact evaluations of active labor market policies. In undertaking evaluations, the social, political and economic objectives of the relevant programs need to be taken into account.

## **5 Conclusions**

The timely transition out of coal is necessary for achieving the objectives of the Paris Agreement on climate change but can lead to massive job losses. Large-scale restructuring in the coal sectors of Eastern and Western Europe, China, and the United States have resulted in hundreds of thousands of coal workers losing their jobs. These figures do not even include the spillover job losses in industries in the coal value chain or those job losses associated with the goods and services that support the coal workers' livelihoods, such as local food market or clothing vendors.

This paper summarized experiences and best practices for governments to support structural change and assist workers and communities affected by job displacements. For this purpose, it considered a wide range of past adjustment episodes caused by either the coal transition or a multitude of other shocks affecting various sectors that resulted in significant worker dislocation to develop a comprehensive policy approach to address the job displacements that are bound to arise from future industry-wide shocks or realignments, including future coal transitions. The paper grouped processes of divestiture of labor into three major phases: pre-layoff planning, pre-layoff assistance, and post-layoff assistance. Pre-layoff planning is the process of (i) collecting information to identify the extent and nature of the social and labor challenge; (ii) reviewing relevant labor regulations and the social protection system; and (iii) setting up institutions and partnerships to support workers' transitions and beginning a

communications campaign. Pre-layoff assistance is intended to prepare workers for impending layoffs and includes (i) giving notice of dismissal to affected workers; (ii) providing information regarding assistance options; and (iii) implementing services such as worker profiling and skill audits, job counseling, and placement services. Post-layoff assistance is the most active and costly phase in the divestiture process and encompasses (i) the provision of temporary income support; (ii) the implementation of active labor market policies to individual displaced workers and potentially a wider group of beneficiaries; and (iii) if necessary, the deployment of social programs for continued access to health, education and similar services as well as pension benefits.

The challenges resulting from the coal transition should not be minimized. Research from the United States, China, Poland, and other countries shows that many displaced workers have long unemployment spells and that those who find work may suffer earnings reductions of more than 20 percent over at least 15 to 20 years (cf. von Wachter et al., 2009). Nevertheless, the careful and systematic management of job displacements resulting from the coal transition, as proposed in this paper, can contribute to mitigating social and labor consequences, strengthening morale and productivity, improving the efficiency of structural change, and ultimately contribute to realizing the objectives of the Paris Agreement on climate change.

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## **Annex A – Snapshot of Characteristics of Workers in China’s Mining Sector**

This annex describes observable characteristics of workers in China’s mining sector (including the coal mining sector) and discusses implications for policy and further research. While in terms of some observable characteristics, workers in China’s mining sector are relatively similar to workers in the rest of the country’s economy, some other observable characteristics reveal notable differences between the two groups of workers. Figure 5 summarizes selected observable characteristics of workers in China’s mining sector as compared to all workers in the country based on data from the 2014 CHIP household survey.<sup>11</sup> The figure shows that mining workers are relatively similar to other workers in terms of their average age, their average hours of work per week and their typical level of education. At the same time, three notable differences exist. First, average monthly earnings in the mining sector are almost ten percent higher than in the economy at large. Second, the proportion of men among all workers is almost 30 percentage points higher in the mining sector than in the overall economy. Third, the occupational structures of the mining sector and the economy as a whole exhibit some significant differences.

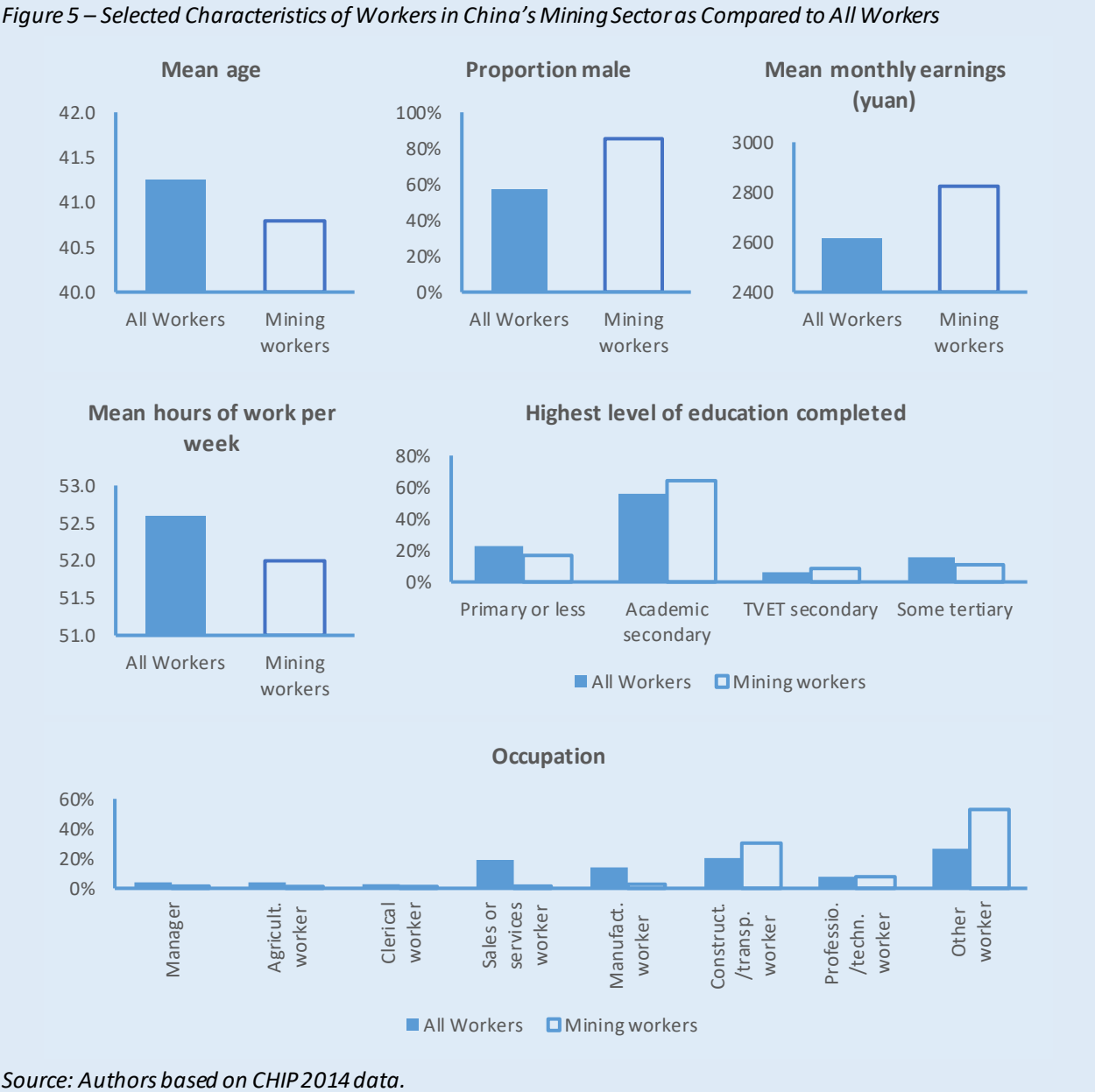
Some of the differences in observable characteristics between mining and other workers in China will make mitigating the social and labor consequences of the transition from coal particularly challenging. As workers in the mining sector tend to be comparatively well paid despite exhibiting productive characteristics like average age and education that are similar to the rest of the population, they can be expected to be reluctant to give up employment in the sector and take up a job in other industries – as this would likely lead to an earnings loss. The occupational structure of workers in the mining sector deserves more detailed study, but likewise it is likely that at least a certain proportion of workers in the sector are active in very specific occupations with no direct equivalent in other sectors. This again makes mobility difficult or at the very least necessitates education and training interventions. Of course, this still leaves open

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<sup>11</sup> Since 1988, the Chinese Household Income Project (CHIP) has conducted several waves of household surveys with the objective of tracking the distribution and dynamics of household income in China. The most recent wave of the survey used here was led by the China Institute for Income Distribution at Beijing Normal University and was conducted in July and August 2014. It covered 14 provinces (Beijing, Shanxi, Liaoning, Jiangsu, Anhui, Shandong, Henan, Hubei, Hunan, Guangdong, Chongqing, Sichuan, Yunnan and Gansu) and 19,948 households classified as urban, rural or migrants. As the CHIP data do not result from purely random sampling, the evidence derived from them should not necessarily be interpreted as representative for China as a whole. Cf. Gustafsson, Li and Sato (2014) for a description of the CHIP data.

some redeployments options outside of coal mines but within the mining sector at large. Finally, the very small percentage of female workers in China’s mining sector paints a somewhat different picture than the one that was relevant for countries in Eastern Europe or Central Asia that went through a coal transition in the 1990s (cf. Strongman, 2017). Nevertheless, it underlines that it is important to assess the gender dimension in each particular case where a coal transition takes place and design an appropriate response strategy.

Figure 5 – Selected Characteristics of Workers in China’s Mining Sector as Compared to All Workers



Source: Authors based on CHIP 2014 data.

In order to derive specific policy recommendations for China's transition from coal, more detailed analysis would need to be undertaken. The information presented in this annex provides only a snapshot of the differences in observable characteristics between mining sector workers in China and the country's general workforce. The existence of relatively high-quality survey data for the country would make it possible to analyze these differences in more detail. To derive specific policy recommendations the analysis of household survey data would ideally need to be complemented by a more holistic investigation based on a number of other sources including (i) firm-level data which would potentially allow a more detailed description of the coal mining sector itself including its spatial structure; (ii) institutional and administrative information on relevant policies and government initiatives specific to the mining sector and the transition from coal; and (iii) qualitative data from research on the ground on the conditions in the mining sector and industries that can at least potentially absorb displaced coal workers, the dynamics of change, and the expectations, and needs and perceptions of various stakeholders including the government, coal mining firms, and workers and their representatives.

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## ABSTRACT

Realizing the objectives of the Paris Agreement on climate change will necessitate a timely transition of the global energy system out of coal, but evidence from Europe, China, and the United States shows that the coal transition can lead to massive job losses. This paper develops a comprehensive policy approach to assist affected workers and communities. Based on a conceptual framework that distinguishes between pre-layoff planning, pre-layoff assistance and post-layoff assistance, it discusses the main instruments for mitigating social and labor impacts, in particular income support and active labor market policies. In addition, it considers the institutional context, the dynamics of change, and implementation issues. The paper argues that while challenges resulting from the coal transition should not be minimized, the sound management of job displacements can contribute to mitigating the social consequences, strengthen morale and productivity, and improve the efficiency of structural change.

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