THE INVASION OF UKRAINE: THE IMPACT, IN NUMBERS

07 OCTOBER 2022

Data and analyses collected by the ETF from various sources.

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Overview

7.64m

Refugees from Ukraine recorded across Europe*
7.53m on 30/09
(UNCHR: 04/10/22)

2,601

Damaged & destroyed education facilities (8.27% of total)
2,551 on 23/09
(Ukrainian MoES: accessed 07/10/22)

$4.4b

Direct damage estimates in education infrastructure**
$3.8b on 22/08
(Ukrainian MoE & KSE 05/09/2022)

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* Individual refugees from Ukraine recorded across European countries, see UNCHR.
** See source for an updated note on the calculation of the estimates.
Population

Total population
(for 2022; Statistics Service of Ukraine estimates; 14/06/22)

- Refugees across Europe* 7.53m on 30/09 (1.55% increase)
  (UNCHR: 04/09/22)

- Internally displaced 6.97m on 23/08 (10.5% decrease)
  (IOM estimates: 26/09/22)

- Total returnees** 6.01m on 23/08 (0.38% increase)
  (IOM estimates: 26/09/22)

Note: Including returns of former IDPs from other locations within Ukraine, as well as self-reported returns from abroad (16%). See p.1 of IOM.

* Individual refugees from Ukraine recorded across European countries, see UNCHR.
** Total returnees including returns of former IDPs from other locations within Ukraine, as well as self-reported returns from abroad (16%).
*** Analytical figures available in OCHA (Aug Revision 2022) and its annex.

Population with education needs
(children, teachers & personnel in need of education programmes)

- 5m

Internally displaced children
( Education Cluster Dashboard***: 07/09/22)

- 1m

Children returnees
5.54m on 23/07 (15% increase)
( Education Cluster Dashboard***: 07/09/22)

- 0.7m
### Damages, losses and reconstruction & recovery needs by sector

<table>
<thead>
<tr>
<th>Sector</th>
<th>Damages ($b)</th>
<th>Losses ($b)</th>
<th>Reconstruction &amp; recovery needs ($b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>114.5</td>
<td>130.4</td>
<td>197.8</td>
</tr>
<tr>
<td>Education</td>
<td>4.4</td>
<td>2.1</td>
<td>5.4</td>
</tr>
<tr>
<td>Industry &amp; business services</td>
<td>9.7</td>
<td>30.3</td>
<td>19.7</td>
</tr>
</tbody>
</table>

**Note:** Damages refer only to replacement cost at market value; Losses are decreases in revenues in the private sector due to the shutdown of the operation and a decline in demand, rent revenues & planned budgetary expenditures; Total Reconstruction & Recovery needs includes technological modernization and the principle 'Build Back Better' when rebuilding destroyed assets.

**Source:** Ukrainian MoES & KSE; 05/09/2022
Human capital & education: impact on infrastructure

- **2,601**
  - Damaged & destroyed education facilities (8.27% of total)*
  - 2,292 damaged; 309 totally destroyed
- **4.4b US$**
  - Direct damage estimates in education infrastructure***
- **19**
  - Destroyed VET schools
- **111**
  - Damaged VET schools
  (damaged + destroyed = 17.5% of total**)

Most damaged & destroyed education facilities as % of total, per region*

- Donetsk: 62.3%
- Kharkiv: 33.4%
- Luhansk: 29.1%
- Mykolayiv: 20.7%
- Chernihiv: 12.3%
- Kyiv: 12.2%

Most damaged & destroyed VET education facilities as % of total, per region**

- Donetsk: 77.2%
- Kharkiv: 46.1%
- Luhansk: 56%
- Mykolaiv: 35.4%
- Chernihiv: 33.3%
- Kherson: 30.7%

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* % of total education facilities; incl. pre-primary, primary, secondary, TVET and tertiary ones only;
** % of total VET education facilities.
*** Note: estimates include kindergartens and secondary & higher education infrastructure. See source for an updated note on the calculation of the estimates.
** Sources: Ukrainian MoES for the damaged & destroyed education facilities; Statistics Service of Ukraine, Statistical Yearbook (2020) for the (national and regional) number of institutions; accessed 07/10/22.

Source: Ukrainian Government & Kyiv School of Economics; updated 05/09/2022.
Human capital & education: impact on infrastructure damaged & destroyed education facilities (as % of total, per region)

Note: % of total education facilities; incl. primary, secondary, TVET and tertiary ones.
Sources: ETF calculations based on Ukrainian MoES for the damaged & destroyed education facilities; Statistics Service of Ukraine, Statistical Yearbook (2020) for the (national and regional) number of institutions; updated 09/09/22. Differences from previous versions refer to revisions from MoES and updates on the number of VET schools.
Human capital & education: back to school

Current situation:

- Out of approx. **13,000 secondary schools** in the country, **27%** returned to in-class learning, **30%** to a mixed mode (in-class & remote) and **43%** to remote only (OCHA Sep 2022 & MoES Aug 2022).

- **85% of VET schools** started their activity, where **27.8%** in-class, **21.2%** in distance and **50.9%** in blended format.

- **164,000** internally displaced learners and **>4000** education institutions are used for purposes other than education.

- **25%** of teachers are involved in services other than education (humanitarian support, volunteer services, etc.)

  Source: Education Rapid Needs Assessment Survey

Gaps:

- **Current conflict** makes the full reopening of schools in-person unlikely; meaning the continued heavy reliance on online learning (OCHA, Aug 2022)

- **Displacement**, the damage and destruction of educational facilities, and a lack of access to technology & internet connection have seriously affected students’ ability to learn (WB, May 2022)

- “Schools have been targeted or used by parties, resulting in families not feeling safe to send their children to school” (UNICEF, Aug 2022)

Impact on Opportunity to Learn & Learning Outcomes:

- **School disruptions** due to war or pandemics can have; **persistent negative effects** on learning because they impact all elements of a student’s opportunity to learn:

  i. less time spent on learning, and

  ii. lower quality of instruction via remote/online modalities, leading to

  iii. less content covered during instruction.

  Source: (WB, May 2022)
Human capital & education: back to school teaching modes

<table>
<thead>
<tr>
<th></th>
<th>Secondary Schools*</th>
<th>VET institutions**</th>
</tr>
</thead>
<tbody>
<tr>
<td>In class learning</td>
<td>27%</td>
<td>27.8%</td>
</tr>
<tr>
<td>Distance learning</td>
<td>43%</td>
<td>21.2%</td>
</tr>
<tr>
<td>Mixed mode</td>
<td>30%</td>
<td>50.9%</td>
</tr>
</tbody>
</table>

Source: OCHA Sep 2022 & MoES Aug 2022; Ukrainian MoES; 05-25 Sep 2020; Overall, 227,056 VET students started classes, (229,248 in 2021) including more than 83,000 newcomers (105,333 in 2021).
Human capital & education: how and where teaching is being delivered

IDP learners

164k

Education institutions used for other purposes

4,000

IDP learners per region (in thousands)*

Note: Survey was conducted on 6 May 2022 at municipality (Hromadas) level and 1,141 of 1,451 municipalities replied (79% response rate). * Including General and Preschool level

Source: Ukraine Education Rapid Needs Assessment Survey
Human capital & education: challenges to education delivery

Needs & challenges for continuation of education services

- 202k tablets required
- 165k laptops required

Challenges for teachers to facilitate online learning (# of municipalities)

- 825 High speed Internet access
- 747 Lack of tech devices
- 621 Security Situation
- 272 Lack of Digital Skills
- 206 Household Duties
- 56 Other

Note: Survey was conducted on 6 May 2022 at municipality (Hromadas) level and 1,141 of 1,451 municipalities replied (79% response rate).

Source: UKRAINE EDUCATION RAPID NEEDS ASSESSMENT SURVEY
Human capital & education: understanding pupil and teacher needs

Needs for Inclusive Education

- Equipment for organisation: 870
- Teacher Training: 823
- Teaching Guides: 721
- Equipment for access: 600
- Equipment for Children Impairement: 316
- Equipment For Children Schools: 302
- Gender Sensitive: 205
- GBV: 191
- Equipment For Children Specialized Schools: 66
- Equipment for IRC: 55

Desired Topics For Professional Development

- Orientation Rapid PSS: 770
- First Aid: 642
- EORE: 573
- Trauma-Informed Teaching: 570
- Online Teaching: 414
- Conflict Sensitive Education: 345
- Other: 4

Note: Survey was conducted on 6 May 2022 at municipality (Hromadas) level and 1,141 of 1,451 replied (79% response rate). Answers refer to number of municipalities.

Source: UKRAINE EDUCATION RAPID NEEDS ASSESSMENT SURVEY
**Human capital & employment: characteristics of Internally Displaced Persons (IDPs)**

- **64%** Lost their job due to the war
- **34%** Job status *unimpacted* by the war
- **52%** of IDPs who lost their job due to war attempted to find work**
- **51%** Work remotely
- **43%** Temporary unemployed*
- **6%** Retired; parental leave; not working for medical reasons
- **9%** found a new job

**Top sectors for current & future job search***

- Services: 15%
- Trade: 11%
- Transport: 7%
- Construction: 6%
- ICT: 5%

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**Note:** All figures refer to Internally displaced persons only. *As they plan to resume work upon returning home.* **Includes also unemployed before the displacement; 29% of respondents did not look for work, 17% did not have a need to work (retired, disabled, maternity leave, etc.), and 1% did not answer the question. ***Refers to those IDPs who did not search for a job yet or did not find it after moving from their habitual place.

Human capital & employment: profiles of refugee population

- **Female/Male**: 86% Female, 14% Male
- **60+ age**: 12%
- **35-39 age**: 49%
- **18-34 age**: 26%

**Top occupations***
- **Education**: 12%
- **Wholesale & retail**: 12%
- **Healthcare**: 6%
- **Hotel & restaurant**: 4%
- **Construction**: 49%
- **Mining industry**: 49%

**Employment status**
- **Employed***: 76%
- **Retired***: 11%
- **Housekeeping***: 9%
- **Unemployed***: 4%

**Education levels**
- **University**: 46%
- **Vocational**: 27%
- **Secondary**: 21%
- **Primary**: 2%

*Status before leaving Ukraine.

Note: Based on 23,054 interviews contacted in Belarus, Bulgaria, Hungary, Republic of Moldova, Poland, Romania and Slovakia between May and mid-August 2022. While respondents are randomly selected to reduce bias, non-probability sampling is used and results cannot necessarily be extrapolated to the population of refugees from Ukraine as a whole.

Source: UNCHR (Aug 2022) "Profiles, Needs & Intentions of Refugees from Ukraine*"
Human capital & employment: the potential contribution of Ukrainian refugees to the labour force in European host countries

Labour market integration challenges

Facilitated by:
- Education profile
- Existing social networks
- Immediate access to employment

Hindered by:
- Single mothers with children and other dependents

<table>
<thead>
<tr>
<th>Labour force relative change projections*</th>
<th>Employment relative change projections**</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>all European countries</strong></td>
<td><strong>all European countries</strong></td>
</tr>
<tr>
<td>0.5%</td>
<td>0.4%</td>
</tr>
<tr>
<td>2.2%</td>
<td>1.9%</td>
</tr>
<tr>
<td>2.1%</td>
<td>1.9%</td>
</tr>
<tr>
<td>1.9%</td>
<td>1.9%</td>
</tr>
</tbody>
</table>

Czech Republic
Poland
Estonia

Relative change in labour force due to inflows of Ukrainian refugees by the end of 2022; all European countries refer to all European host countries together.

Relative change in employment due to inflows of Ukrainian refugees by the end of 2022; all European countries refer to all European host countries together; estimates for Czech Republic, Poland and Estonia refer to a change of at most 1.9%.

Source: OECD (July 2022) "The potential contribution of Ukrainian refugees to the labour force in European host countries"
Human capital & employment: characteristics of refugee population

- **Employed:** 43.5%
  - Full-time: 87.4%
  - Part-time: 7.7%
- **Unemployed:** 3.7%
- **Outside labour force:** 52.8%

- **Skills level 1 (low):** 15.5%
- **Skills level 2 (medium):** 35.5%
- **Skills level 3 & 4 (high):** 49.0%
- **Basic education:** 15.3%
- **Intermediate education:** 18.5%
- **Advanced education:** 66.2%

- **Employed:** 8.3% Managers
- 25.2% Professionals
- 15.5% Technical & Professionals
- 5.7% Clerical Support workers
- 21.7% Service & Sales Workers
- 0.6% Skilled Agricultural, Forestry & Fishery Workers
- 4.3% Craft & Related Trades Workers
- 3.2% Plant & Machine Operators & Assemblers
- 15.5% Elementary Occupations

*Note: All indicators except labour force status pertain to previously employed refugees. Refugees are estimated at 5.3m, based on UNHCR calculation on 24 April 2022.*

Looking ahead: estimates of reconstruction costs & infrastructure losses

Estimates of reconstruction costs:

- $564b - $600b (including direct and indirect losses; Ukrainian Government & Kyiv School of Economics)
- $330b - $550b (30% to 50% capital stock destroyed assumption, CEPR)
- $200b - $500b (based on previously EU funded countries for their accession, CEPR)

Estimates of infrastructure losses* (08 September):

- $114.5b overall direct loss
- $35.1m transportation infrastructure
- $47.8m on housing
- According to preliminary estimates, the recovery needs for destroyed assets is at least $197.8b

Productive capacity estimates:

- 7.5% of Ukraine’s productive capacity has been lost since the start of the invasion (incl. 2.5% of the primary, 3.2% of the secondary & 1.6% of the tertiary sector).
- This includes among others: 20% of land unavailable for agricultural production, 40% of the productive capacity in the steel sector and, 43% of the energy sector being occupied or damaged (mainly nuclear & thermal)

Source: Ukrainian Government & Kyiv School of Economics

* As noted, compared to the previous estimate of June 8, 2022, the total amount of damages decreased by $8.4 billion. The key factor in the decrease was the updated information and microdata from government agencies that made it possible to refine calculations regarding the amount and average cost of damages; See Source
Looking ahead: SMEs, business surveys & reallocation program

SMEs in war time survey:

- 42% do not operate at all
- 31% suspended their operations
- 27% continue to pay full wages vs 21% not being able to pay

The Ukrainian business survey:

- 86% of companies slowed down, reduced or stopped their operations
- 37% of companies are transforming their business due to war (completely/partially or in the process to)
- 16% will transform their business in the near future
- Orders (50%), logistics (29%), supplies (21%) and payments (20%) are the main difficulties faced

MoE reallocation program

- 300 enterprises have reallocated, from impacted regions, following the Ministry of Economy initiative.
- 1,500 reallocation applications have been submitted.
- 121 business are already operating.

Source: Ukrainian Ministry of Economics, April 2022

Source: EBA Unlimit Ukraine survey, March 2022

Source: Kyiv School of Economics, March 2022
Looking ahead: institutional forecasts

<table>
<thead>
<tr>
<th>GDP (% change)</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Bank</td>
<td>3.4%</td>
<td>-45.1%</td>
<td>2.1%</td>
<td>5.8%</td>
</tr>
<tr>
<td>IMF</td>
<td>3.4%</td>
<td>-35.0%</td>
<td>..</td>
<td></td>
</tr>
<tr>
<td>EBRD</td>
<td>3.4%</td>
<td>-20%</td>
<td>23%</td>
<td></td>
</tr>
<tr>
<td>Statistics Services of Ukraine</td>
<td><strong>-15.1% 2022 Q1</strong></td>
<td><strong>-37.2% 2022 Q2</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Employment Losses**     |       |       |       |
| ILO                     | -30.2% (based on current situation) | -43.5% (based on military escalation) | -8.9% (based on hostilities cessation & withdrawal) |

| Poverty rate***         |       |       |       |
| World Bank              | 1.8%  | 19.8% | 18.5% |
| UNDP                    | 2.5%  | 4.2% - 28% | .. |

| Vulnerable population ^ | UNDP  |       |       |
| 46.4%                   | 49.7% - 62.5% | .. |

Notes: 2022 and 2023 refer to forecasts, except for Statistics Service Ukraine referring to 2022Q1.
Real GDP change compared to Q1 & Q2 2021, respectively (seasonally adjusted).
% changes compared to pre-conflict period; scenarios for next three months:
Upper middle-income poverty rate ($5.5 in 2011 PPP); UNDP: range of four crisis scenarios projections based on initial partial equilibrium analysis and
GDP shocks ranging from 7% to 60% decrease.

^ Vulnerable population to income poverty is defined if his/her income is above $5.50 a day but below $13 a day.
Looking ahead: proposals

Estimates:

- **Learning losses** due to a combination of extended pandemic-related closures and the war are estimated to be more than 1 (schooling) year. Also, the **loss of future earnings per student** is estimated to be more than 10% (Angrist, Djankov, Goldberg & Patrinos, 2022).

Demographic & labor market shock

- Ukraine’s population has been **ageing fast**; the (median) age was 35 in 1990, reaching 41 at the start of the war. Proposed policies include: i) incentives for Ukrainians to **return from abroad**, incl. monetary rewards to rebuilding homes and businesses, ii) priority support in the form of welfare payments for refugees who have **lost their family**, iii) **child support policies** to increase fertility rates (lower cost childcare) (Blinov & Djankov, 2022)

- Set up a plan for the reconstruction of post-war Ukraine; including support measures to **encourage the return of those migrants** currently flooding out of the country (WiiW, April 2022).

- In the **reconstruction process**, foreign firms with functioning supply chains and organisational capital can be utilized to address shortages of **expertise and workforce**, while encouraging the **use of local labor force** (CEPR, April 2022).
Looking ahead: proposals

Long-term cost of wars on wartime children

• There is little doubt that the trauma and fear Ukrainian children are experiencing will have a tremendous effect on their physical and mental health, an effect that may last for life.

• A number of studies provide mounting and alarming evidence on the potential impact that the Russian invasion may have on the human capital and physical and mental health outcomes of the Ukrainian children who are being exposed to war and large-scale destruction.

• Findings from historical episodes underscore the importance of policies that prioritise the child. Such policies are essential not only to improve the wellbeing of wartime children and their children, who are also impacted by warfare, but also to facilitate peacekeeping operations (for a review see Akbulut-Yuksel, May 2022)

• According to historical lessons on displacement in Europe, refugees, and by extension their children, will be keen to make the most of a traumatic experience. Access to education can be a silver lining of forced migration, allowing refugee children to invest in a brighter future (see Becker, March 2022)
Looking ahead: proposals

Technology & education:

• Build back better: **R&D reversing - brain drain actions**, including the use of EU educational and research programs (Erasmus, ERC), while attracting **modern technologies and skill-intensive capital investment** (CEPR, April 2022).

• Upholding Ukraine’s ‘intellectual sovereignty’: ensuring the on-going presence of the country’s research and educational sector within the worldwide scientific community and, providing reach and profile to the country’s intellectuals, teachers and researchers in the global community (Cooper, Brik, Shapoval, **LSE Policy Brief**, 2022).